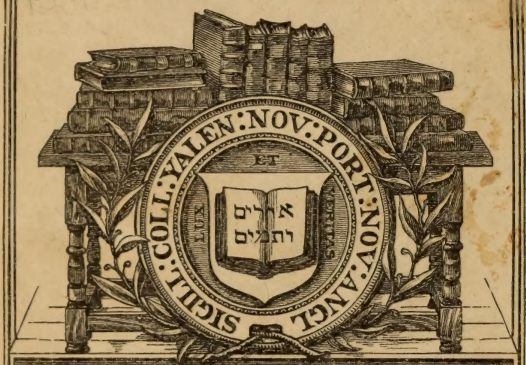

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A

MANUAL

OF

MATERIA MEDICA

AND

PHARMACY,

COMPRISING

A CONCISE DESCRIPTION

OF THE

ARTICLES USED IN MEDICINE;

THEIR

PHYSICAL AND CHEMICAL PROPERTIES; THE BOTANICAL CHARACTERS OF THE MEDICINAL PLANTS;

And the Formulæ for the Principal Officinal Preparations of the American, Parisian, London, Dublin, Edinburgh, &c. Pharmacopœiæ;

WITH

OBSERVATIONS ON THE PROPER MODE OF COMBINING AND ADMINISTERING REMEDIES.

BY H. M. EDWARDS, M. D. AND P. VAVASSEUR, M. D.

TRANSLATED FROM THE FRENCH,

With numerous Additions and Corrections, and adapted to the practice of Medicine and the art of Pharmacy in the United States,

BY JOSEPH TOGNO, M. D.
MEMBER OF THE PHILADELPHIA MEDICAL SOCIETY,

AND

E. DURAND,
MEMBER OF THE PHILADELPHIA COLLEGE OF PHARMACY.

"I am neither for the ancients, nor for the moderns, but shall be of every age and nation."
Baglivi.

PHILADELPHIA:
CAREY, LEA & CAREY—CHESNUT STREET.

1829.

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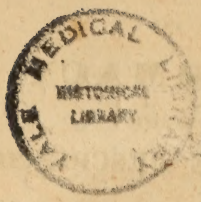

EASTERN DISTRICT OF PENNSYLVANIA, to wit:

BE IT REMEMBERED, That on the eighth day of September, in the fifty-fourth year of the independence of the United States of America, A. D. 1829, CAREY, LEA & CAREY, of the said district, have deposited in this office the title of a book, the right whereof they claim as proprietors, in the words following, to wit:

"A Manual of Materia Medica and Pharmacy, comprising a Concise Description "of the Articles used in Medicine; their Physical and Chemical Properties; the "Botanical Characters of the Medicinal Plants; and the Formulæ for the Principal "Officinal Preparations of the American, Parisian, London, Dublin, Edinburgh, "&c. Pharmacopœiæ; with Observations on the Proper Mode of Combining and "Administering Remedies. By H. M. Edwards, M. D. and P. Vavasseur, M. D. "Translated from the French, with numerous Additions and Corrections, and "Adapted to the Practice of Medicine, and the Art of Pharmacy in the United "States. By Joseph Togno, M. D. Member of the Philadelphia Medical So-"ciety, and E. Durand, Member of the Philadelphia College of Pharmacy.

"'I am neither for the ancients, nor for the moderns, but shall be of every age and nation.'
Baglivi."

In conformity to the act of the Congress of the United States, entitled "An act for the encouragement of learning, by securing the copies of maps, charts, and books, to the authors and proprietors of such copies, during the times therein mentioned."—And also to the act, entitled, "An act supplementary to an act, entitled, 'An act for the encouragement of learning, by securing the copies of maps, charts, and books, to the authors and proprietors of such copies during the times therein mentioned,' and extending the benefits thereof to the Arts of designing, engraving, and etching historical and other prints."

D. CALDWELL,
Clerk of the Eastern District of Pennsylvania.

SKERRETT—NINTH STREET,
PHILADELPHIA.

A.B

TO THE

MEDICAL PROFESSION

OF THE

UNITED STATES.

THE TRANSLATORS.

GENERAL HOSPITAL
NEW HAVEN, C

PREFACE OF THE TRANSLATORS.

NOTHING characterizes more strongly the present state of the physical sciences, than the universal emulation to improve and advance them; and the constant research of their votaries after truth, by ascertaining, verifying, and testing every fact which has been offered as such, taking nothing for granted, except that which is self-evident and undeniable. There is scarcely any branch, or even the most minute ramification of the medical science, which, in consequence of this emulation and scepticism, remains unexplored, or exempt from the most careful scrutiny and investigation. Unlike times, not very far remote, in which bold assertions, and absurd hypotheses, consecrated by the weight or authority of a *great name*, passed unexamined, and were implicitly believed and acted upon.

We like and admire the ingenuous maxim promulgated by the celebrated Baglivi. "I am," said he, "neither for the ancients, nor for the moderns, but shall be of every age and nation." This candid and philosophical declaration shall also be our motto. We have observed in our addition to this work, as much as it laid in our power, the golden rule of Locke—"*Try all things, hold fast that which is good.*" For, as the same author remarks, "to prejudge other men's notions before we have looked into them, is not to show their darkness, but to put out our own eyes." We cannot see without regret, therefore, the constant opposition which every thing *new* encounters from some individuals who can read the past only, but will not admit, or cannot understand the improvements of the present. The history of medicine offers us but too many examples of this system of opposition to every thing that is not *antique;* and the difficulties which the justly celebrated Harvey, Rush, Jenner, Bichat, Gall, and Broussais, experienced in promulgating their useful discoveries and doctrines, are remarkable instances of this spirit so hostile to every suggestion of improvement or innovation.

Locke, that great master of *matter*, *mind*, and *human passions*, has faithfully, although quaintly recorded this feature of the character of man, too much to the purpose not to be cited in this place.

"Truth," says he, "scarce ever yet carried it by vote any where at its first appearance. New opinions are always suspected, and usually opposed without any other reason, than because they are not common. But *truth*, like gold, is not the less

so for being newly brought out of the mine. 'Tis trial and examination must give it price, and *not any antique* fashion; and though it be not current by public stamp, yet it may, for all that, be as old as nature, and certainly not less genuine."

At the present epoch, when the collision of opposite and conflicting opinions is so great, it is very needful to refer from individual practice and experience to nature, unbiassed observation, general principles, and sound philosophical induction. Such ought to be the last resort of every well-organized mind, on the moot points of our science. We must, in this place, confess, that we love principles, doctrines, or theories; for to us these words mean the same thing: they are the representatives of an aggregation of well-observed and methodically arranged facts. This was also the meaning attached to these words by one of the fathers of American medicine, the Boerhaave of America, Dr. B. Rush, who, full of this idea, was led to form those new combinations of facts from which he deduced his fundamental principles. We shall make no apology for introducing here, on this subject, a passage from the introductory lectures of this estimable and learned teacher and philosopher. "Should we build facts upon facts until our pile reached the heavens, they would tumble to pieces, unless they were cemented by principles. *Medicine without principles is an humble art, and a degrading occupation.* It reduces a physician to a level with the cook and the nurse, who administer to the appetites and weakness of the people; but, directed by principles, it imparts the highest elevation to the intellectual and moral character of man. In spite, therefore, of the obloquy with which they have been treated, let us resolve to cultivate them as long as we live. This is my determination while I am able to totter to this chair, and if a tombstone be afforded after my death to rescue my humble name for a few years from oblivion, I ask no further addition to it than that '*I was an advocate for principles in medicine.*'"

We do not wish to be supposed to think, that the authors of the work which we now present to the public in an English version, have brought to perfection the science of materia medica. For we are aware that this will necessarily require many years more of careful investigation before it is established on a firm foundation. We are persuaded also, that had our humble, though useful task, of translators and annotators, devolved on one who has more talent and leisure than we possess, he might have introduced still greater improvements, and perhaps have made more extensive and useful additions than has been in our power. But, such as it is, we think that this Manual of Materia Medica possesses a great number of advantages over any English production of the same kind.

The authors, as well as ourselves, have been obliged, in many instances, to trust to the observation of the classical authors in our science, as must always be the case in similar compilations. But, although we cannot boast of any extensive personal experience, still, we may become architects, and build a temple to science, though the materials be not entirely our own.

Medicine is unfortunately far from having attained to that degree of perfection which would entitle it to a rank among the exact sciences. The cause of this inferiority is obvious; for the medical, more than any other science, and materia medica especially, had early to contend against difficulties of every description—ignorant empiricism, blind superstition, religious opposition, scholastic subtilties, and above all, false reasoning, and personal considerations. But a new era begins to dawn, and we have every reason to hope that many years will not elapse before the science of medicine shall have arrived at the desirable degree of perfection. Experience daily points out to us the importance of its application, and every cultivator of the science must perceive with satisfaction, that the efforts made in our days to throw some light on its obscure points, and to improve its indispensable auxiliary, materia medica, have been often crowned with complete success.

It is the attribute of every department of knowledge, which has any pretension to the appellation of an exact science, to be based on a fixed, certain, and immoveable foundation. Conjectural data, and imperfect observations, can never form the basis of a science. Its object must be well known; the principles on which it is founded must be clear, explicit, and certain; and the person who studies it must have the moral certitude of attaining the object in view.

Chemistry, so closely connected with our subject, has arrived, within a few years, at such a point of perfection, as almost to astonish the intelligence of man. Its analysis of the proximate and ultimate principles of bodies, particularly in the vegetable and mineral kingdoms, has already exceeded our expectation, and we may hope to obtain, with the assistance of this auxiliary science, notwithstanding our imperfect instruments, the most beneficial results—remedies or *modifying agents*, capable of acting with more uniformity, regularity, and certainty, on the economy, by which diseases will be rendered less formidable, more manageable, and oftener cured. Nay, it will one day enable every nation to supply itself with some of the productions of other climates, or with substitutes equally precious. France has already furnished us an instance of what chemistry can do for the improvements of a country.

Materia medica has felt the genial influence of the analytic me-

thod, and does not deserve the harsh, but heretofore well-merited reproaches bestowed on it by Bichat. Its materials are now better understood with respect to their natural history; the pharmaceutist has paid more attention to their physical properties, and has acquired a more correct knowledge of the process needful to render them more fit for therapeutical employment; the botanist has determined the real family of each plant used in the practice of medicine; the chemist has minutely investigated the proximate principles of many medicinal articles; and the experimental physiologist has determined which of their component parts possess medicinal properties, which are useless or noxious, and which of them are sedative or stimulant. After all these improvements, we may easily conceive that materia medica is in a fair way to perfection, and its study no longer that of a mass of incoherent precepts, and heterogeneous substances.* Let any one who doubts, read on this subject the works either of Alibert, Barbier, Begin, N. Chapman, and J. Eberle, and he will be convinced of the truth of this assertion.

Few, we believe, will refuse to admit with us, that the most important addition which has been made to our stock of knowledge relative to the articles of the materia medica, is the curious and valuable fact, that some among them possess a *positive elective action*, or an *organic elective affinity*, if we may be allowed the expression, in virtue of which they produce an effect on certain organs, tissues, systems, or portions of systems, whilst they induce little or none on others. In this manner, many internal organs are placed, to a certain degree, within our reach, and in relation with remedies, either directly, through the medium of the circulation, or indirectly by means of the sympathies, which serve as a link to all the parts of the human body.

As we have said, the work we now present to the medical profession of the United States, is, and cannot be otherwise than a compilation. Writers on materia medica from all countries, have been made to contribute to its co-ordination; therefore, we do not claim for the original work, or for whatever we have added, the credit of originality. Indeed, how could it be otherwise, in a work to which the naturalist, the botanist, the

* "The whole materia medica is infected with the baneful consequences of the nomenclature of diseases; for every article in it is *pointed* only to their NAMES, and hence the origin of the numerous contradictions amongst authors who describe the *virtues* and *doses* of the same medicines. By the rejection of the *artificial* arrangement of diseases, a revolution must follow in medicine. *Observation* and *judgment* will take the place of *reading* and *memory*, and prescriptions will be conformed to existing circumstances."—*Dr. B. Rush.*

These prophetic words of a great physician are in daily progress of being realized. Bichat has been—and the *artificial* arrangement of diseases has disappeared; and the disciples he has left, have substituted *observation* for *reading*.

chemist, the physiologist, and the physician, must each contribute his share of information, and thus assist in building the noble superstructure of this science.

But what we particularly claim for this work is, the order, method, clearness, and systematic arrangement of the materials which are now for the first time brought into this form, although before within the reach of every one. In this respect we do not hesitate to affirm, that the present manual of materia medica is far superior to every one we have ever met with.

The manner of classifying remedies, adopted by our authors, is undoubtedly the best, and presents the fewest objections. This arrangement greatly facilitates the study of this science, and assists very much the memory. We conceive it to be the best classification, because it groups remedies together, not only according to their natural families, (when these belong to the vegetable kingdom, which leads generally to a correct knowledge of their medicinal character,) but also according to their physiological action on, or *elective affinity* for, one particular organ, or system, or part of a system. Thus, the general stimulants are subdivided into special, i. e. into those which act on the kidney, or the cutaneous tissue, or the genito-urinary organs, or the nervous system, &c.

We have added to the original work every important article belonging to the American medicinal plants, following as closely as laid in our power the method of the French authors. We here acknowledge with pleasure, that for this part of our labours we are principally indebted to the works on therapeutics of Drs. N. Chapman and J. Eberle, to Dr. Coxe's American Dispensatory, to that of Dr. Thacher, to Dr. Bigelow's work on Medical Botany, to notes on Dr. S. Jackson's Lectures at the Philadelphia Medical Institute, to Dr. W. P. C. Barton's various works, to the different medical and pharmaceutical periodicals, &c. As we have not always quoted the author from whom we derived our information, we have been particular in stating this, and hope that this acknowledgment will be sufficient to shield us against the charge of plagiarism.

Although we do not need *new agents* to enable us to modify the action or functions of our organs, (for to this are confined the effects of all remedies,) or, as our friend, Dr. S. Jackson, would express it, by one of his favourite metaphors, "That we do not so much require new sails to navigate our ship with security and success, over the stormy ocean of disease, as a correct acquaintance with the power of those we already possess," still, a correct knowledge of those which are indigenous to the United States, cannot be unacceptable to the medical profession.

We have, however, collected in this manual, all the know-

ledge the profession could furnish us on that very interesting, and indeed too much neglected subject, the properties and the medicinal application of our indigenous productions. Although we possess many very valuable plants, still comparatively few have as yet been introduced into regular practice, and the reason may be, that they have not been made the subject of extensive public experiments, and that those which have been made in private practice, and an account of which has been published in periodical journals, have produced little impression on the minds of physicians, and have already fallen into oblivion. Why this general indifference for our native productions? Why not give them a fair trial? and if they prove valuable substitutes, why should we send to every quarter of the globe for our remedies, while we are so well provided for at home? Are we not rich in the vegetable as well as in the mineral kingdoms? Our supposed poverty proceeds, we fear, more from our want of industry than from the real scarcity of natural productions, possessing properties which entitle them to our attention; but what is still more to be lamented is, that so few American plants should have been properly analyzed. We shall therefore exhort the analytic chemist to ascertain the active principles contained in them, for we must confess, that the greatest deficiency and want of accuracy in this part of the history of American plants, was felt by us at every step we made in our compilation. We have, however, tried to fill up this hiatus, by instituting analyses of some of the most important among them. These additions to the original work required from us much attention and eclectic research; many of them contain analyses which were never before published. In this part of our labour we have been assisted by Drs. Edward Staples and C. Conwell of Philadelphia, both distinguished for their peculiar analytic talents, and for their indefatigable researches in vegetable chemistry.

It would be as unprofitable to our readers as impossible to ourselves, to point out every little alteration we have thought it proper to make, in order to *Americanize*, if we may be permitted the expression, this excellent work. However, we shall state in general terms, that some articles of the materia medica, unknown and useless in this country, and even very little used in Europe, have been suppressed, some errors which had crept into the original have been corrected, and many parts of the work have been altered, in consequence of the progress our science is every day making.

We have carefully compared the present work with the last editions of the different English dispensatories, and with that of the French Codex, by Dr. Ratier, and we have availed ourselves

of whatever we judged might be useful, and render our labour still more complete. The French authors having derived most of their information from editions anterior to those we have consulted, we have necessarily been obliged to change the whole of the articles entitled Dose and mode of administration, and in so doing we have introduced all the improvements in the mode of preparation, in the formulæ, &c. which the improved editions contain. We have added all the important matter we could collect from the American Pharmacopœia, and from that of the Hospitals of New York. We have also added many analyses of the mineral waters of Europe and of the United States, knowing from experience how difficult it is to obtain any correct information on this subject, particularly with respect to the mineral waters of this country. For this purpose we have consulted the labours of Drs. Meade, Steel, S. L. Mitchell, James M'Neven, Dana, &c. and are under great obligations to them for the information contained on this subject in our additions. Our remedial resources in this way have been too much neglected, and in consequence of the want of correct information, contained in such works as can be easily consulted on this subject, very little attention has been paid to this highly interesting auxiliary means of curing diseases. We need not say how very important it is to know the chemical as well as the therapeutical properties of a spring before we attempt to recommend it to a patient for his complaint. Influenced by this idea, we have bestowed much time and care in collecting these scattered materials and arranging them in a more simple and useful form.

We have not thought it proper to reduce to *American* the *European* weights specified in the French and other magistral and pharmaceutical preparations given in the articles entitled Dose and mode of administration. It would have introduced fractions in these formulæ, which might have been more embarrassing than it will be to have recourse to the table of the difference of weights and measures that we have purposely introduced into this work.

Before concluding, we will claim the indulgence of the profession for the execution of the part of this work which concerns us. Every one is well aware of the difficulty, for persons who write in a language which is not their own, to avoid every rock on which foreigners most generally split, and thus leave themselves open to harsh, and sometimes undeserved severity of criticism. We therefore expect that indulgence, which the zeal for doing well, and the desire of aiding the advancement of our science, even when not attained, always deserves. In conclusion, we shall say of our labour, (if small things may be compared to great,) what the celebrated Johnson said of his Dictionary:—

of opium, whilst seven drops only of the latter contain the same quantity of this article? This very important study is but too much neglected, and this neglect may be ascribed to the disgust attendant on consulting different pharmacopœiæ, which prevents medical men from seeking for that knowledge which can only be found in voluminous works, or in the extracts that have been made from them. Then, by uniting to the history of each remedy, the indication of the principal officinal preparations in which it enters as an essential part, their composition, and the doses in which it may be administered, we believe we perform a very important task, and we doubt not that our work owes to this circumstance a part of the success which it has obtained. In the first edition, we confined ourselves to mentioning the principal officinal preparations of the pharmacopœiæ of Paris, London, Edinburgh and Dublin; in the present one we have added those of the pharmacopœiæ of Austria, Russia, Finland, Denmark, Prussia, Poland, Madrid, Holland, &c. Finally, in order to render our work more complete and useful, we have added to the history of each remedy a considerable number of magistral formulæ, so that the student may at once be acquainted with its simplest modes of administration, and those most generally employed. Most of these formulæ have been extracted from the formulary of Dr. Magendie, from that of the civil hospitals of Paris, from Dr. Ratier's, and from that of Guy's hospital.

In describing each remedial substance, we have indicated:—

1*st.* The names by which it is generally known, and especially the popular pharmaceutical and scientific appellations, either botanical or chemical.

2*d.* Its origin.

3*d.* When it is a vegetable substance, the botanical characters of the plant which furnishes it, is also given. As to those names of the families to which these plants belong, and as to those which may serve to indicate the remedies obtained from the mineral kingdom, we have presented them, at the end of this work, in various tables, in order to avoid tedious repetitions.

4*th.* Its physical properties, and by these, we understand its description in the state in which it is commonly found in commerce.

5*th.* Its chemical properties.

6*th.* The substances with which it must never be united in a pharmaceutical preparation.

7*th.* Its preparation.

8*th.* Its mode of action on the economy and its therapeutical employment.

9*th.* The doses in which it is given. The different forms in which it may be administered, either internally or externally; the principal officinal preparations in which it enters as a compo-

nent part, its composition and doses; and finally, some magistral formulæ to serve as examples of the manner of prescribing it.

In the first chapter, under the head of general considerations, we have presented that which is most essential to be known about remedial agents in general; we have considered them in relation to their physical and chemical properties, natural affinities, mode of action on the animal economy. The different preparations to which the pharmaceutist subjects them, and the different modes of administering them, and finally the rules to be followed in their administration and in the manner of mixing them; and this constitutes the art of formulating.

Thus, in a compilation of this nature, the plan of which is confined, it is almost impossible to cite all the authors from which we derived most of our information; however we shall here indicate those works to which we are mostly indebted. They are—

Professor Alibert's *Elements of Therapeutics;* Barbier's *Treatise on Materia Medica;* Brugnatelli's *Materia Medica;* Chapman's *Elements of Therapeutics;* Chevalier and Idt's *Manuel des Pharmaciens;* Chevallier, Richard and Guillemin's *Dictionary of Drugs;* De Candolle's *Essay on the Medicinal Properties of Plants;* Desbois de Rochefort's *Course on Materia Medica;* Duncan's *Edinburgh Dispensatory;* Geoffroy's *Tractatus de Materia Medica;* Guersent's *Medical Dictionary,* Guibourt's *Histoire des Drogues Simples;* Hanin's *Lectures on Materia Medica;* Orfila's *Elements of Medical Chemistry,* and *Lectures on Legal Medicine and Toxicology;* Paris' *Pharmacologia;* Patissier's *Manual of Mineral Waters;* Richard's *Medical Botany;* Schwilgue's *Materia Medica;* Swediaur's *Pharmacologia and Pharmacopœia;* Thénard's *Treatise on Chemistry;* Todd Thomson's *London Dispensatory;* Virey's *Natural History of Medicaments;* Whitelaw Ainslie's *Materia Medica,* &c. &c. &c.

N. B. In the body of this work we have printed in italics the pharmaceutical and scientific latin names of medicinal substances, and those of the officinal and magistral pharmacutical preparations.

LIST

OF THE

SIGNS AND ABBREVIATIONS

EMPLOYED IN THE COURSE OF THIS WORK.

℔. Pound.
℥. Ounce.
ʒ. Drachm.
℈. Scruple.
Gr. Grain.
C. *Congium*, Gallon.
O. *Octans*, Pint.
f.℥. Fluid ounce.
f.ʒ. Fluid drachm.
♏. Minim.
Gut. *Gutta*, Drop.
Cochl. *Cochleare*, Spoonful.
Cochl. maj. *Cochleare majus*, Tablespoon.
Cochl. min. *Cochleare minus*, Teaspoon.
Manip. *Manipulus*, Handful.
j. i. One.
ss. Half.
āā. or ana. Of each.
q. s. *Quantum sufficit*, As much as necessary.
p. e. Equal parts.
P. U. Parts used in practice.
B. C. Botanical characters.
P. P. Physical properties.
C. P. Chemical properties.
Incomp. Subst. Incompatible substances.
Prep. Mode of Preparation.
Th. E. Therapeutical employments.
D. & M. of Adm. Dose and mode of administration.
U. S. Pharmacopœia of the United States.
P. Codex Parisiensis.
L. London Dispensatory.
E. Edinburgh Dispensatory.
D. Dublin Dispensatory.
A. Austrian Pharmacopœia.
R. Russian Pharmacopœia.
F. Pharmacopœia of Finland.
Den. Pharmacopœia of Denmark.
Pr. Prussian Pharmacopœia.
Pol. Pharmacopœia of Poland.
B. Batavian Pharmacopœia.
M. Pharmacopœia of Madrid.
New York H. Pharmacopœia of the New York Hospitals.
Guy's H. Pharmacopœia of Guy's Hospital.
Paris H. Formulary of the Hospitals of Paris.
F. M. Formulaire magistral du Dr. Magendie.
Comp. *Compositus*, Compound.
Ext. *Extractum*, Extract.
Pulv. *Pulvis*, *pulverisatus*, Powder, pulverized.
Boil. Boiling.
Infus. Infusion.
Decoct. Decoction.
Carb. Carbonate.
Sulph. Sulphate.
Nitr. Nitrate.
Mur. Muriate.
Acet. Acetate.
Intern. Internally.
Extern. Externally.
Lin. Linnæus.
Lam. Lamarck.
De Cand. De Candolle.
Rich. Richard.
Willd. Willdenow.
Walt. Walter.
Mich. Michaux.
Humb. Humboldt.
Salisb. Salisbury.
Muhl. Muhlenberg.
Marsh. Marshall.
Rumph. Rumphius.
L'Herit. L'Heritier.
Morris. Morrison.

MANUAL

OF

MATERIA MEDICA.

CHAPTER I.

General Considerations.

§ 1. MATERIA MEDICA, or Pharmacologia, (φάρμακον, remedy, λόγος, a discourse,) embraces the knowledge of remedies, a name given to substances possessing the virtue of modifying the actual state of one or several of our organs, and which are employed in the treatment of diseases. This science includes the study of the physical and chemical properties of remedies, that of their intimate nature, of the action they have upon the animal economy, of the cases in which their exhibition may be advantageous, and, finally, of the manner in which they are to be prepared and administered.

§ 2. It is difficult to establish a strict distinction between remedies and aliments. In fact, they have a common origin; their action on the economy produces changes in its actual state, and their employment may be useful in restoring health. Dr. Barbier establishes, as a distinctive character of remedies, the property of not being decomposible, nor easily transformed into chyle by the action of the stomach, but of being capable of modifying the state of this organ, whilst, on the contrary, the alimentary substances are digested and transformed into chyle. In most cases this distinction is correct; thus, camphor, introduced into the gastric cavity, soon passes into the circulation, and is found afterwards in the blood and urine in the same state as it was administered; but there are, nevertheless, several remedies which undergo remarkable changes; for instance, most of the alkaline vegetable salts are transformed into carbonates; and several vegetable substances, evidently absorbed, are not, however, to be found in the blood. On the other hand, we do not believe that, in the present state of our physiological knowledge, we can positively affirm that certain proximate principles, which justly

deserve the name of aliments, such as fibrin and albumen, do not pass into the blood without, previously, undergoing changes in their intimate nature. We do not consider, consequently, this distinction between remedial and alimentary substances as sufficiently accurate. In order to avoid these inconveniences, it would probably be sufficient to investigate whether these different substances, immediately after being absorbed, have, or have not experienced any alterations in their nature before passing into the circulation: some being assimilated to our organs, and becoming an integrant part of our body, whilst others do not contribute, in a direct manner, to nutrition.* The former are the aliments, the latter the remedies. There are, however, a certain number of nutritive substances which are ranked amongst remedies; but these are such as are not commonly used as aliments, or which are endowed, at the same time, with other virtues by which some advantage may be derived in the treatment of diseases. Acid fruits, farinaceous seeds, albumen, gelatin, &c. are of this description.

§ 3. The line of demarcation, which distinguishes remedies from poisons, is not better defined; for the differences between them often consist simply in the greater or smaller degree of intensity of their action upon the economy. Both modify the actual state of our organs; but to those which are useful in the treatment of diseases we give the name of remedies, whilst we call poisons "every substance which, when taken internally, or applied in whatever manner on a living body, and, in a very small dose, impairs health, or annihilates life entirely." (Orfila's Lect. upon Leg. Med. Vol. II. p. 3.) And, indeed, we often see the same substance acting as a remedy, or as a poison, according as it may be employed in a smaller or larger quantity; and the most violent poisons become, in the hands of a skilful practitioner, the means of effecting the most astonishing cures; thus we may say with Pliny, *ubi virus, ibi virtus.*

Physical Properties of Remedies.

§ 4. The three kingdoms of nature furnish us with remedial substances. Their physical properties cannot always inform us of the mode of action they may have on the animal economy; but, in a great number of cases, the investigation of their colour, odour and taste, may give us an approximate idea of their virtues. We shall therefore investigate their different properties.

§ 5. The colour of mineral substances furnishes no indication of the mode or intensity of the action they are susceptible of exercising upon the animal economy; thus, corrosive sublimate, one

* See the very interesting experiments of Drs. Lawrance and Coates on this subject.—Am. Eds.

of the most violent poisons, is white as the sulphate of magnesia, a very mild purgative, as well as the hydro-chlorate of soda, or common salt, an excitant daily used as a condiment. The same is the case with remedies derived from the animal kingdom; but vegetables present, in this respect, some very remarkable differences. The *white* colour seldom belongs to plants endowed with very active properties; on the contrary, it exists almost always in mucilaginous, insipid, and emollient vegetables. In general, we may even assert, that among the plants which constitute varieties of the same genus, those, the colour of which is paler, are also less active. There are, however, exceptions to this rule; thus, the cruciferæ with white flowers are endowed with medicinal properties more energetic than the species of the same family which bear yellow flowers.

The *yellow* colour is met with in a vast number of plants; but, although it exists in several insipid, sweet, and acrid vegetable substances, it belongs more especially to those which contain a bitter principle, and this colour very seldom co-exists with free acids. The greater number of vegetables possessing the most intense bitterness are of this colour; as colocynth, gentian, gamboge, columbo, rhubarb, &c. However, the proximate principles to which these substances are indebted for their bitterness are, most frequently, white; and, on the other hand, the liquorice root is yellow, although its taste, far from being bitter or acrid, is sweet and saccharine.

The *red* colour most frequently indicates, in vegetables, an acid or astringent property. All red fruits contain a more or less considerable quantity of acid; the same is the case with many flowers; thus, the petals of red roses have a very decided astringent taste, and contain an acid, whilst the petals of white roses are, on the contrary, tasteless and mucilaginous. Finally, in the stems and roots this colour is still united, in a great number of cases, with a styptic taste, owing to the gallic acid and tannin. The rathania and strawberry roots are an instance of it; but even here we must not generalize too much; for we meet with numerous exceptions, amongst which we will only mention the nut-gall.

The *brown* colour has a great analogy to the preceding, inasmuch as it very seldom belongs to substances which do not possess more or less astringent or tonic properties, proceeding from the presence of tannin, or its proximate bitter principle. The cinchona, the oak bark, kino, &c. are instances of it. Sometimes these principles exist simultaneously with a volatile oil, which by its hot and pungent taste and its stimulating action disguises more or less completely their properties; this we find to be the case with cinnamon, cloves, &c.

The *green* colour, which is the most generally diffused in the vegetable kingdom, is commonly an indication of a sharp taste, more or less astringent; this indication will be found sufficiently correct in fruits, but less so with respect to the leaves.

The *blue* colour indicates generally, the presence of a free alkali. Some plants the flowers of which are of a lively blue, such as borage, have no venomous action; but most commonly, those with dark blue flowers and with leaves, which participate of this colour and are of a glaucous green, have a very powerful action on the economy, and may become valuable remedies or energetic poisons: such are hellebore, the papaveraceæ, &c. It has been remarked likewise that the fungi, the juice of which is of a bluish colour, are acrid and venomous. Nevertheless the epidermis of some fruits, the plums and black grapes, for instance, is of this colour, although it is no indication of any noxious property.

Finally, the *black* colour belongs more especially to venomous plants; those, the stems and leaves of which are spotted with black dots, contain in general, some venomous principles, which are found but in small quantity, or even not found at all, in the species closely allied to them. The black colour of the fruits, the blackish-brown tint of the flowers, the gloomy and dull appearance of the whole plant, are so many indications of its acrid and narcotic properties. The belladonna, solanum nigrum, hyoscyamus, &c. are instances of it.

Thus we see by the above remarks that, the *colour* of plants, may furnish us with indications of their other properties; but as we meet, at every step, with numerous exceptions, these considerations can never be of great value.

As to the proximate principles of vegetables which are employed in the practice of medicine, their colour, generally *whitish*, cannot, in any way, lead us to pronounce beforehand on their nature, or mode of action.

§ 6. We are no better enlightened by the *taste* of remedies as to their therapeutic action, than we are by the characters drawn from their colour. Nevertheless the substances which do not affect the organ of taste, are commonly devoid of any very appreciable action on the economy, unless, however, they should be very minutely divided. As the taste of substances varies almost ad infinitum, it is often very difficult, if not impossible, to define them. There is, however, a number of them which are so very distinct, and so generally known, as to enable us to mention them here.

The *salt* taste is peculiar to some mineral substances and vegetables which contain a large proportion of saline principles, such are *salsola soda* and other plants growing on the sea shore.

Generally the substances endowed with this savour irritate the parts with which they come in contact.

The *acid* taste is still more characteristic; inasmuch as it is always owing to the presence of an acid, that is, of a *compound* endowed with the property of reddening litmus and of forming with salifiable bases, new compounds, called salts. Acids are furnished by the three kingdoms of nature; those derived from the mineral kingdom are the most energetic; when the acids are concentrated, their taste is not only acid, but it becomes even caustic. Acids when weak or diluted, act upon the economy as refrigerants and temperating medicines.

The *caustic* taste, proceeds from the corrosive action some substances exercise on the organ of taste. This property is peculiar to concentrated acids, alkalies, to some other mineral, and to a few vegetable and animal substances; such as cantharides, mezereum, &c. The *acrid* taste differs but little from the preceding except by its degree of intensity; it is peculiar to a great number of articles, obtained from the mineral and vegetable kingdoms. Such of the latter as possess this acrid quality, only in a small degree, are irritants, and may act as general excitants, purgatives or emetics. Those, on the contrary, in which this savour is highly developed, act generally, as substances of a caustic nature, by disorganizing the tissues, or by producing on them an inflammation more or less lively. According to the intensity of this action they are called *caustic*, *vesicating*, or *rubefacient* substances.

The *astringent* or *styptic* taste is one of the most distinct and best characterized, and is found in a great number of vegetables. As we have mentioned above, it commonly co-exists with the red and brown-red colour, and it indicates generally the presence of gallic acid and of tanning substances. It is met with likewise, but somewhat modified, in some mineral substances, such as alum, the salts of iron, &c. Most of the remedies endowed with this taste act, generally, in a similar manner upon the living tissues, as will be seen in the sequel.

The *bitter* taste is one of the most common in nature, and belongs principally to vegetable and animal substances.—It is the general character of tonic remedies, but it is also found in several substances, the action of which is very different, such as colocynth, aloes, nux vomica, &c.

The *hot* taste also appertains almost exclusively to vegetable and animal substances, and especially to the vegetables called aromatics and spices. It is in many instances combined with the bitter savour, and indicates frequently the presence of an essential oil, the action of which stimulates powerfully.

The *nauseous* taste is closely connected with the impression produced, on the olfactory organs, by the substances possessing this quality. It is only to be found in a small number of substances and, besides, it cannot give us any indication of their modus operandi; however, we may with propriety say that it appertains more especially to narcotic vegetables, although it exists also in several exciting, purgative or emetic remedies.

The *mucilaginous* taste, indicates generally the presence of gum, fecula, albumen, or other proximate principles, possessing nutritive properties, and but a very slight remedial action. Most of the substances endowed with this savour, are used as emollients. The same is the case with the *saccharine* taste; which is met with, however, in several gentle purgatives, and in some metallic preparations.

§ 7. The *odour* of remedial substances, may sometimes be the means of ascertaining approximatively the mode of action they may induce on the animal economy, principally when they belong to the vegetable kingdom, since most of the mineral substances are inodorous. It is perhaps, still more difficult to define and classify odours than the different tastes of substances, we will therefore confine ourselves, as we have done till now, to mention those only which are most generally known and at the same time the most strongly characterized.

The *aromatic* odour coincides generally with the hot and pungent taste, and in many cases, it proceeds also from a volatile oil, to the presence of which most aromatic vegetables owe their stimulating property. *Mace*, *balsamic* and *resinous* odours, and some others, have a great analogy to the one just mentioned, and belong also more particularly to the class of excitants. There is however a certain number of these substances which have scarcely any odour, such as capsicum, &c.

The *fetid* odour is found in several vegetables which act in a specific manner upon the nervous system and are denominated anti-spasmodic. The odour of camphor produces the same effect. The *virous* odour almost exclusively characterizes or belongs to narcotic plants; however, it resembles very much the *nauseous* odour of most vegetables which act as purgatives or emetics. There are substances which, as ether and hydro-cyanic acid, possess an odour *sui generis*, rendering them easy to recognize. Finally, the consideration of this property is often indispensable to enable us to judge of the quality of remedies: in fact, a great number of them owe their activity to a volatile principle, which at the same time, renders them very odorous. Thus when they have lost their odour, we may be assured they have lost also their medicinal properties.

§ 8. Remedies may be administered in a solid, liquid or gaseous state. These conditions influence their mode of action. The same may be said as to their degree of division, when they are exhibited in a solid state. Thus, the *Asarum Europæum* finely pulverized, acts as an emetic, whilst, when it is merely a coarse powder, it becomes a purgative.

§ 9. The analogy existing between plants, as relating to their exterior forms, may often lead us to the knowledge of their therapeutic action. The plants, the botanical characters of which are the nearest connected, contain generally the same proximate principles, and, as it is upon their chemical composition that depend their medicinal virtues, the existence of analogous principles necessarily implies a similitude of action. Now, since these divers proximate principles are the consequence of the nutrition of plants, and, since this function is intimately connected with the structure of their organs, there must exist, generally speaking, determinate relations betwixt their structure and their therapeutic properties; and indeed experience in this case confirms what theory induces us to suppose. It is now positively ascertained that, in most cases, all the plants which have with each other a sufficient analogy to be considered as varieties of the same genus, possess the same properties. We may even go farther, and say that commonly all the plants of the same family act, upon the living economy, in an analogous manner, and that it is probable that the anomalies which, in the present state of our knowledge, are exceptions to this general rule, will disappear, when the structure of these plants shall have been more attentively investigated, and when their proper place shall be assigned to them in the natural order of plants. However, we have already been able to ascertain that the greater number of those families which may be considered to be the most natural, are composed of plants endowed with almost similar properties. Thus, the family *cruciferæ* contains an acrid and volatile oil to which it owes its stimulating properties, and which is exhibited with success in the treatment of scorbutic affections and in atonic diseases generally. The family *labiatæ* contains, besides an aromatic essential oil, an extractive bitter principle; and therefore these plants are at the same time tonic and stimulating; but one of these properties predominates, according as the one or the other of these principles happens to be in a greater proportion. The same analogy exists between the plants of the family *umbellatæ*. The root of all the *violaceæ* have more or less an emetic property; the *solanaceæ* are narcotic; the *euphorbiaceæ*, acrid and purgative; all the *coniferæ* contain a resinous juice which gives them peculiar properties. However, amongst the *rubiaceæ*, most of which

are eminently tonic, we find the ipecacuanha which is essentially an emetic. In order to impart to these remarks a greater degree of evidence, we shall give, at the end of this work, a table of the vegetable remedial substances, arranged according to the order of their natural families.

Of the Intimate Nature and Chemical Properties of Remedies.

§ 10. All the substances in nature are either simple or compound. The former, which are as yet known by the appellation of elementary bodies, are those which, until now, have never been resolved but into homogeneous particles. The latter, on the contrary, are composed of several elements, and consequently contain heterogeneous particles.

In the present state of chemistry, we are acquainted with fifty simple substances, viz. oxygen, hydrogen, boron, carbon, phosphorus, sulphur, selenium, iodine, chlorine, nitrogen, and forty metals which are classified under six heads, called classes, according to their degree of affinity for oxygen. But few only of these substances are employed in medicine, such as sulphur, iodine, iron, mercury, &c.; and even with respect to these, it often happens that they are combined with other elements through the instrumentality of our organs, and can only act on the economy in that state of combination. Besides, the action of each is different, and we cannot say, therefore, any thing very general on these substances.

The compound substances are divided into two large classes, according as they belong to the organic or inorganic bodies. The former constitutes the vegetable and animal, and the latter the mineral kingdoms.

All simple substances may, by their combinations, give rise to inorganic compounds; on the contrary, organic substances contain but a few of the elementary bodies. Thus, nearly all vegetable substances are exclusively composed of oxygen, hydrogen, and carbon, and most of the animal substances are also formed out of these three elements, with the addition of nitrogen: sulphur, phosphorus, iron, &c. are also found in some organic substances, but in a very small quantity. Thus, the bodies resulting, in a direct manner, from the combination of these elements, and which, in their turn, aid in the composition or formation of the different parts of plants and animals, have received the name of *proximate principles.*

Among the compound substances furnished by the mineral kingdom, those which are the most generally used in medicine are the acids, the metallic oxides, some of the metallic sulphurets and chlorides and salts.

Among the proximate principles of vegetable and animal sub-

stances, which are employed as therapeutical agents, some enjoy an acid, or an alkaline property, whilst others, on the contrary, do not possess either, and are, as it were, neutral.

§ 11. The appellation of acid belongs to all the bodies endowed with the following properties:—1st, of producing on the organ of taste a sour or caustic sensation; 2d, of reddening the tincture of litmus; and 3d, of combining with the salifiable bases, more especially with alkalies to form neutral salts. The mineral acids may be either solid or gaseous, and most of them are soluble in water. Their composition varies; for, sometimes they are formed of oxygen and another simple body; at others, of hydrogen and of another elementary body, oxygen excepted. Vegetable acids are composed of carbon, and of oxygen and hydrogen in suitable proportions to produce water, with moreover an excess of oxygen. They are colourless; most of them are solid, inodorous, heavier than water, and soluble in this liquid as well as in alcohol. The acids which are found entirely formed in animals, or which may be obtained from animal substances through the instrumentality of different agents, are sometimes composed of nitrogen, carbon, oxygen, and hydrogen; at others, of hydrogen, carbon, and nitrogen, or of these two latter elements, united with chlorine.

Concentrated acids are never administered internally; they are sometimes applied to the skin as escharotics or as irritants. Several of them, when diluted with water, are rendered fit for therapeutical employment, and may be administered internally. Then they generally act as cooling, and, occasionally, as astringent remedies. Some of them, however, produce peculiar effects, as we shall mention hereafter.

§ 12. The salifiable bases are of three kinds: 1st, the metallic oxides; 2d, ammonia; 3d, the organic alkalies. The metallic oxides are compounds resulting from the union of oxygen with a metal, and almost all of them may, at a certain degree of oxidation, combine with acids and form salts. They are solid, heavier than water, brittle, and of a dull appearance when pulverized. With the exception of a single one, they are inodorous, and a few only are sapid and soluble in water. The oxides of the first section, that is, those which we have not yet been able to reduce, were formerly called *earths*. Those of the second section belong to metals which decompose water at the ordinary temperature, and absorb oxygen at all temperatures. The protoxides of calcium, strontium, barium, sodium, and potassium, which belong to this class, are more especially called *alkalies*. They are white, sapid, soluble in water; they turn the syrup of violets green, and bring back to its former blue colour litmus reddened by acids. The oxides of the other four classes are mostly of various co-

lours, insipid, insoluble in water, and without action on the reagents we have just mentioned. In the practice of medicine, we exhibit only some of the alkalies, the oxides of iron, mercury, zinc, &c.; but each of these substances act upon the economy in a different and peculiar manner.

As to ammonia, we shall only say at present, that it is a compound of hydrogen and nitrogen, and has all the properties of the alkalies.

The *organic salifiable bases* are proximate vegetable products, having the property of uniting with acids, of saturating them more or less completely, and consequently forming salts. These bases are all solid, white, of a savour more or less bitter or acrid. Most of them are inodorous and capable of crystallizing. They are little or not at all soluble in cold water; but, on the contrary, soluble in alcohol. The quantity of acid they saturate is very small; finally, they are all composed of carbon, nitrogen, hydrogen, and oxygen; they are decomposed by the action of caloric, and are thus converted into water, carbonic acid, ammonia, an empyreumatic oil, &c. They are very slightly soluble, and on this account are seldom used in medicine, except in the state of salts. Their action varies according to the nature of the plants from which they are extracted.

§ 13. Salts are substances composed of an acid and a base, in which the respective properties of these two elements are more or less completely neutralized. All salts are solid, (the superfluate of silica, and sub-fluo-borate of ammonia excepted,) and are more or less capable of crystallizing, when they pass from the liquid or gaseous, to the solid state. The form of their crystals varies; they contain generally more or less water incorporated, as it were, with their particles, which is called *water of crystallization.* The salts formed by an acid and a colourless base, are also colourless; but in every other case besides, they are almost always coloured. The greater number of salts are inodorous; those which are insoluble in water are insipid; such, on the contrary, as are soluble in it, are more or less sapid.

Salts may be neutral, although they contain a small excess either of acid or of base. Salts of every description always contain a determinate quantity of acid, and this quantity is such, that the proportion of oxygen which it contains, is in a constant relation with that of the oxygen contained in the base. Thus, in all the neutral sulphates the acid contains three times as much oxygen as the base; in the neutral carbonates the acid contains four times as much oxygen as the base; in the sub-carbonates this proportion is as 2 to 1. The following examples will best explain this remarkable law.

In the sub-carbonates we find—

100 parts of carbonic acid, to contain	oxygen, 72.32	Soda, - -	141.38	to contain oxygen, 36.15.
		Potassa, -	218.37	
		Baryta, -	343.83	
		Protoxide of lead,	506.06	

In the neutral carbonates we find—

100 parts of carbonic acid, to contain	oxygen, 72.32	Soda, -	70	to contain oxygen, 18.07.
		Potassa, &c. -	209	

In the neutral sulphates we find—

100 parts of sulphuric acid, to contain	oxygen, 60.87	Soda, - -	78.46	to contain oxygen, 20.07.
		Potassa, -	120.27	
		Lime, - -	70.92	
		Magnesia, -	51.94	
		Zinc, - -	101.96	

The solubility of salts in water depends not only on their affinity for this liquid, but also on the degree of cohesion of their particles. They generally require less warm than cold water for their solution. The salts with excess of base are insoluble, when their base is itself insoluble; the salts with excess of acid are, on the contrary, more or less soluble.

By the action of caloric, crystallized salts containing a great deal of water of crystallization, melt at first in this water, but afterwards dry up. Those containing but a small quantity of it decrepitate, that is, they are broken up into small fragments by the elastic power of the aqueous vapour, which is generated internally. Heated to a higher degree, salts melt, volatilize, and are decomposed. Finally, when they are moistened, they may all be decomposed by an electric current. Exposed to the action of atmospheric air, some of them absorb oxygen, and others are decomposed and volatilized; there are, however, few instances of this kind. Salts endowed with the greatest affinity for water, attract the moisture of the air, and are said to be *deliquescent*. Crystallized salts which have not a great affinity for water, and contain a large proportion of it in the state of water of crystallization, yield it to the atmosphere by evaporation, lose their transparency, and crumble into powder: we then say that they are *efflorescent*.

The action that salts have on the economy is very different according to their nature; but, generally, it depends more upon the base than upon the acid.

§ 14. The analogy existing between the properties of substances differing in their nature can seldom be a means of knowing *a priori*, the influence they may have on the economy. In fact, we see that remedies which have the least resemblance to each other, as to their chemical characters, produce analogous effects. Thus, manna and cream of tartar are both laxative, and,

nevertheless, there is no relation whatever between them. On the other hand, baryta and strontia are both metallic oxides, the chemical properties of which are so similar that, for a long time, they have been mistaken for each other, and, nevertheless, the former is a violent poison, whilst the latter has but a very weak action upon the economy, as Gmelin's late experiments have proved to be the case. However, it has been generally observed that when a substance possesses therapeutical virtues, or is strongly marked by venomous properties, different from those depending upon its chemical action on the tissues, its action is neither changed nor destroyed by any combinations whatsoever that it may form; provided, however, that the latter be not insoluble in water. Thus, mercury and all its preparations produce a similar effect, but the intensity of which varies according to their degree of solubility, &c.; but, on the contrary, the activity of the remedial substance depends upon its chemical action on the tissues with which it is in contact, and this activity may be completely destroyed by the effect of chemical combination. Potassa and concentrated sulphuric acid, for instance, are both very energetic caustics; but combined together, and constituting sulphate of potassa, their contact with the tissues scarcely produces any irritation.

Of the Action of Remedies.

§ 15. The changes that remedies produce in the actual state of the tissues with which they come in contact, may depend upon either the chemical action of these substances, or upon the peculiar influence that they exercise upon the vital properties of the organs, and the nature of which is unknown. Concentrated mineral acids, for instance, decompose the living parts exposed to their action, and convert them into eschars, in the same manner as they would decompose these same tissues were they deprived of life. Opium, on the contrary, has hardly any chemical action on our organs, but it modifies their vital properties in a very remarkable manner. This physiological action produces, sometimes, some changes in the physical properties of the tissues; thus, certain remedies applied to the conjunctiva, create a slight inflammation, whilst, at other times, this action is only manifested by the modifications which it induces in the exercise of the functions of these same organs; when, for instance, urea is conveyed into the circulation, it exercises a very decided influence on the kidneys, but only appreciable by the increase of the urinary secretion produced by it.

§ 16. The action of remedies is either local or general. The local action is that which occurs directly on the tissues to which they are applied. The substances which are administered in a

small quantity, produce only this latter kind of alteration. These local effects are very different, not only in consequence of the nature of the remedy employed, but also according to the organ it is applied to; and thus we sometimes see the same substance producing different phenomena when applied on the conjunctiva, the tongue, the mucous intestinal membrane, &c. The action of remedies may, to a certain degree, be propagated by the continuous surface of the same organ or membrane; but, when it becomes general, and affects the whole economy, it is in consequence of the absorption of their particles, or by the sympathies they awaken, or, finally, by the revulsions they produce.

§ 17. The recent experiments which have been made on absorption, have proved that the tissues, during life, may be penetrated by liquids.* It is then very easy to conceive how some remedies are capable of extending their sphere of action to a certain distance around the point to which they have been applied, or, in other words, of propagating their influence by contiguity of organs, without producing the same effects on the whole economy. Thus, emollient fomentations and poultices which are applied on the abdomen whenever some one of the organs contained in this cavity is inflamed, at first induce the relaxation of the skin, and afterwards gradually extend their action to the parts more deeply situated.

§ 18. The phenomena of imbibition, which we have just mentioned, constitute, as it were, the first degree of absorption. The particles of the liquids penetrate, in this manner, into the interior of the vessels, then mix with the blood and circulate with it, in every part of the animal economy. Many are the circumstances which influence the rapidity of absorption: they are, on the one hand, the state of the patient, the structure of the parts with which the remedies are brought in contact; and, on the other, the physical and chemical properties of these substances.

In relation to the physiological state of the patient, it is ascertained, however, every thing being equal, that absorption is the less active in proportion as the mass of the liquids actually in circulation is greater, and *vice versa*. Thus, such a substance as is absorbed but slowly, and consequently the effects of which are less sensible in an individual of a general plethoric habit, will be more rapidly absorbed, and will act with a greater energy, if by any means whatever, the mass of the humours in circulation is diminished. According to some experiments we have made on this subject, it would seem also, that the rapidity of the circula-

* See in the 7th number of the American Journal of the Medical Sciences, for May, 1829, the article entitled, Experiments on Endosmose and Exosmose. —Am. Eds.

tion influences the celerity with which, the effects produced by the absorption of a remedial substance, are manifested.

The more or less permeability of the tissues, and their degree of vascularity must likewise contribute to accelerate or retard the absorption occurring in them. It is now ascertained that absorption is most rapid in the aerial cells of the lungs, and that the surface of the serous membranes, possess also a very active absorbing power; but it is less so in mucous membranes, and especially in that of the bladder; finally, the skin presents a still greater obstacle to the passage of these substances into the vascular system.

As to the influence that the nature of remedies has on their absorption, we may state as a general proposition, that the more readily remedies are soluble in water, the more easily they penetrate into the circulation. Dr. Segalas has demonstrated that liquids are equally absorbed, whatever may be their nature, provided they are miscible with the blood, and possess no corrosive action upon our organs. Thus, *cæteris paribus*, water, diluted alcohol, a watery solution of narcotic poisons are absorbed with the same rapidity; whilst the substances which are not miscible with the blood are absorbed with the greatest difficulty, even when they are in a liquid state; in fact, oil, injected into the peritoneal cavity of a dog, is there found even after a lapse of several days, without having undergone any sensible diminution as to its quantity, whilst water disappears from it in a few minutes. This phenomenon seems to depend upon a mechanical cause and may be owing to the physical properties of these substances; for Dr. Magendie has proved that when oil is injected into the veins, it stops in the capillary vessels, which it obstructs and thus prevents the circulation from going on. It is not therefore astonishing that oil should penetrate through the tissues with the greatest difficulty. The substances, which, by their chemical action, produce a disorganization of the parts with which they are in contact, are not absorbed; which must be ascribed to the obstacles this phenomenon itself opposes to the action of imbibition.

§ 19. The particles of the remedial substances, thus conveyed into the current of circulation, penetrate with the blood into every part of the economy, and act directly upon the different organs. We shall hereafter investigate the phenomena they then produce, but we shall for the present, confine ourselves to simply state that, by physiological experiments, we have been able to demonstrate their presence, in the cellulary tissue and in the parenchyma of every organ in the body, and that they are excreted either by the pulmonary or cutaneous transpiration, or, which is most generally the case, by the urinary secretion.

§ 20. The action that remedies exercise on our organs, sometimes extends to the whole economy, without their particles being absorbed, and by the simple intervention of the nervous system. They are then said to act by *sympathy*. By interrupting the nervous communication between the cerebro-spinal system, and the parts to which the remedy is applied, we prevent the phenomena just mentioned, from taking place.

A pretty large number of substances act at first, by sympathy, and afterwards by absorption: for instance, as soon as alcoholic liquors penetrate into the stomach, they transmit to the cerebrum, an excitant impression, which from this point is propagated throughout the economy. But these liquids being soon after absorbed, they then excite all the organs in a direct manner. It is especially between certain parts, that these sympathetic influences are more evident, such as the stomach and the lungs, the stomach and the brain, &c. for these sympathies do not exist, in the same degree, between all the organs. The state of sensibility of the part with which the remedy is in contact, influences likewise, in a remarkable manner, the sympathetic effects it produces. To conclude, there is only a limited number of remedies which act in this way.

§ 21. As to the general action that remedies are capable of producing by revulsion, we shall speak of it, when we treat of their secondary effects. (See § 24.)

§ 22. The influence of remedies may be felt, in a very nearly similar manner, by all the organs. Thus the tonic action of cinchona is at once extended to the digestive organs, the lungs, the muscular system, &c. Although many substances modify the actual state of the whole economy, nevertheless, their influence is more especially felt by one or more of our organs. For instance, a certain quantity of tartrate of antimony and potassa, induces always the same effects on the stomach and abdominal muscles, in whatever manner it may be conveyed into the mass of the blood. Indeed, whether it be introduced into the stomach, or injected into any part of the cellular tissue, or finally directly into the veins, this salt always produces nausea and vomiting. This action is so peculiar that, even after the removal of the stomach of the animal submitted to the experiment, the nausea and contractions of the abdominal muscles, which so powerfully contribute to the action of vomiting, still continue. Tartar emetic therefore has a *special action*.

The action of other substances is especially spent on the nervous system in general, and sometimes even on a particular part of it only. Of this number is strychnia, which, by its introduction in any manner whatsoever into the circulation, seems to concentrate its stimulant action on the spinal marrow. In fact, the ablation of

the brain does not prevent it from producing general convulsions and tetanus, as happens when the spinal marrow is mechanically irritated. Opium, the action of which on the nervous system seems no less evident, appears, on the contrary, to exercise its influence more especially on the brain. The same is the case with hyoscyamus, belladonna, &c. Iodine, although acting as a general stimulant, induces nevertheless some special effects, which have no relation to this general influence. The movements it excites in the thyroid and mammary glands leave no doubt on this subject. We might mention many other instances; but we believe that those we have just produced are sufficient to prove the *speciality* of action of certain remedial substances.*

§ 23. The effects of remedies may be primitive or secondary. The former are the changes induced by the direct action of these bodies on our organs; the latter, the phenomena resulting from these same changes, which are, as it were, their consequences. The primitive effect of caustics is the disorganization of the tissue upon which they are applied; the inflammation and suppuration, by means of which the eschar is detached, are their secondary effects.

The alterations that remedies produce in the actual state of the organs, induce always some corresponding modifications in the exercise of the functions that these parts are called on to perform. Thus, a remedy which, by the contact of its particles, excites the organ upon which it exercises its action, increases its sensibility and the secretions of which it may be the seat. It is, indeed, from these latter phenomena, that we may estimate the kind of medicinal effect belonging to the different substances employed as remedies; and in order to be well acquainted with them, we must successively examine the influence they possess on the most important functions, such as the circulation, respiration, digestion, secretions, &c.

The effects produced by the remedial action are, as we have remarked, either primitive or secondary; the former are absolute; the latter, on the contrary, are relative. Thus, an excitant substance conveyed into the circulation, will always stimulate our organs; but it may produce perspiration, or increase the urinary secretion, according as the individual may be exposed to a warm or cold temperature. Moreover, these secondary effects vary agreeably to the state of that individual; for instance, in a person who has

* [It must be evident, that by *speciality* of action of a substance, is not meant the *mysterious specific* action of some authors; but an observable phenomenon, which may be foreseen and produced at pleasure, as occurs on the administration of secale cornutum, cantharides, &c. This particular *elective affinity* of some substances for certain organs, must be owing we think, to the intimate structure of the tissues composing the organs; however, an extension of Dr. Dutrochet's experiments on this subject, will, we hope, shed some light on this *vital elective affinity*.]—Am. Eds.

an attack of intermittent fever, the exhibition of tonics may arrest the particular symptoms of this disease; in another, affected with a chronic catarrh of the bronchiæ, the administration of these same remedies may facilitate expectoration; whilst in a third, the skin of whom is covered with scorbutic spots, it may cause them to disappear. But in the tonic plan of treatment the effects are always secondary, and are only manifested under particular circumstances. Thus, when we say that a substance possesses febrifuge, anti-scorbutic, and anti-scrofulous properties, we wish only to designate its secondary effects.

§ 24. Observation has taught us, that when an acute inflammation exists in any organ, to create a more lively irritation in another part of the economy, diminishes the intensity of the first affection, and may dissipate it completely. This is the effect we wish to produce, when we administer the remedies called *revulsives*, the primitive action of which, simply local at first, may be afterwards followed by the secondary effects which we have just mentioned. Blisters applied on the skin, and which produce an inflammation more or less lively, act on this principle. And for this reason they are exhibited with advantage in the treatment of certain internal inflammations; in fact, they are capable of diminishing their intensity, and seem, as it were, to draw them to the exterior surface.

§ 25. It is in consequence of the modifications that remedies induce, in the actual state of our organs, that their employment can be useful in the treatment of diseases. Indeed, the considerations drawn from the nature of these alterations, must generally be our guide in their therapeutical employment. There are, however, a few substance, the efficacy of which, in certain diseases, cannot be called in question, although in the present state of our knowledge, we cannot perceive any relation of cause and effect, between the medicinal action they induce, and the influence they have on the symptoms which constitute those pathological states; these substances are called *specific remedies.** We have an instance of this in mercury; the success derived from its administration in cases of constitutional syphilis, cannot be explained by any of the changes which happen after its immediate action on our organs. However, it is probable that it acts in this way, and that these anomalies will disappear when we shall be better acquainted with the syphilitic diathesis.

§ 26. The power of habit influences generally in a very decided manner, the effects of remedies. The organs seem to accustom themselves, by degrees, to the contact of their particles,

* We embrace this early opportunity to remark, that we widely differ from the belief that our authors would here inculcate, the existence of *specific remedies for specific diseases*.—Am. Eds.

and to become less and less sensible to their influence. Indeed, it is necessary, when we exhibit the same substance for a length of time, to increase gradually its dose, in order that the impression it causes on our organs may be followed by the same effects. It is particularly among the remedies which act more especially on the nervous system, that this phenomenon is remarkable. We know in fact, that in the last period of cancerous affections, when we undertake to soothe, by means of opium, the dreadful pains experienced by the patient, it is necessary to increase the dose daily, in order to obtain the desired effect. The influence of habit upon the action of alcoholic liquors, is not less evident. A man habituated to their use, may take a considerable quantity without experiencing any symptoms of intoxication, whilst in another individual, who has not this habit, a very small quantity is sufficient to produce them.

There are, however, several substances, the action of which being slow and gradual, requires a certain time before it operates, and which becomes sensible only when their administration has been continued for a long time. The effects they produce are less susceptible of being weakened by habit, than those of the substances endowed with a more prompt action. However, after the lapse of a certain time, we may, without fear of producing any great accidents, administer doses, the employment of which, in the beginning of the treatment, would have been followed by the most alarming symptoms.

Of the Administration of Remedies.

§ 27. We are now to investigate the administration of remedies in relation, 1st, to the parts of the body with which they come in contact; 2d, the doses in which they are prescribed; 3d, their union with other substances, or the art of compounding a formula; 4th, their choice and the pharmaceutical preparations which we cause them to undergo; 5th, finally, the forms under which they are administered.

§ 28. When remedial substances have a decided action merely on the organs with which they come in contact, it is to the affected parts that they are to be applied, unless, however, it is desired to obtain from their local action, some general effects by *revulsion*, and in this case, it is always on a healthy part, more or less remote from the diseased organ, that it is necessary to act. Thus it is, that in the treatment of certain internal inflammatory affections, caustics or blisters are applied to the skin as revulsive means.

When the influence of a remedy can propagate itself by continuity of organs, we cause it to act on the part nearest to the affected point, in order that its effects may be as decided as possi-

ble; for the influence of these substances is the less powerful, in the same degree as the parts to which they are applied, are more distant from those, the actual state of which we wish to alter.

As to the remedies which act by sympathy, they are generally ingested into the stomach, inasmuch as this viscus has the most intimate sympathetic connexions with all the other important organs. Finally, when the remedial substances act in consequence of the absorption of their particles, they are commonly administered internally; but they may be made likewise to penetrate into the economy, by putting them in contact with the skin, and by taking advantage of the absorbent power of this membrane. The presence of the epidermis is a powerful obstacle to the absorption of the remedial particles, and it would take place very slowly, and would scarcely occur at all, if the operation were confined to their simple application to the part. In order to obviate this inconvenience, it is necessary to force them, as it were, through the pores of the epidermis by means of frictions, or else it is needful to remove this membranous coat, in order to bring them into an immediate contact with the surface of the dermis. The former of these methods, that of frictions, has been known for a long time, and is called *iatraleptic*. Dr. Chrétien, of Montpellier, has highly recommended it, and has prescribed it with success in a great number of cases. The latter is called by Dr. Lambert the *endermic* method. This gentleman, together with Dr. Bally, has made a number of experiments, both at the hospitals of *La Pitié* and *Cochin*, by applying on the raw surface, produced by a blister, divers remedial substances capable of acting by absorption. The results of these experiments, recorded in a memoir read before the Academy of Sciences, leave no doubt whatever on the efficacy of this mode of administering remedies; a method which the author considers as being very advantageous, in all cases where their irritant action on the gastro-intestinal mucous membrane is to be apprehended, and when it is desirable to preserve them from the alterations induced on them by digestion. He advises, however, to exhibit only in this way, the remedies capable of acting with efficacy in very small doses, such as morphia, strychnia, quinia, corrosive sublimate, &c.

§ 29. The doses in which remedies are administered, are different for every individual, according to their nature and degree of activity. We cannot, consequently establish any fixed rule on this subject, and actual experience alone must guide us in this respect. We will merely remark, that the doses of the same remedial substance are to be varied according to the effects which we intend to obtain, the age, sex, temperament of the patient, &c.

The effect of remedies often differ completely, according to the dose in which they are administered. Thus most of the as-

tringent, tonic, and excitant substances have but a purely local action, when given in small doses; whilst, on the contrary, in larger doses, their influence is extended to the whole economy. Opium, taken in small quantity, is a very energetic anodyne; in larger doses it becomes excitant, and when taken in too large a dose, produces a cerebral congestion. Digitalis, in large doses, acts directly on the intestinal canal, as is evinced by the vomiting and the alvine evacuations which follow its administration; in small doses, on the contrary, these local effects are no longer observable, and then we remark the general phenomena, such as a less frequent and less violent contraction of the heart, and an increase of secretions, especially that of urine. The same thing happens with the antimonial preparations, which, according to the dose in which they are exhibited, are by turns emetic, purgative, and diaphoretic.

The dose of remedies must always be regulated by the age, sex, and temperament of the patient. It is of general observation, that the weaker an individual is, and the farther removed he is from the age of puberty, the more strongly characterized are the effects of a definite quantity of a remedy. It follows, consequently, that in order to obtain the same effect in an adult and in a child, it is necessary to administer very different doses. The following table, drawn up by Gaubius, may be used as a guide by young practitioners, for the administration of the active substances in different periods of life; however, it must not be considered as an invariable rule from which they cannot depart.

For an adult, the whole dose taken as unity,	one.
Under one year - -	one-fifteenth to one-twelfth.
—— two years - - - -	one-tenth.
—— three years - - - -	one-sixth.
—— four years - - - -	one-fourth.
—— seven years - - - -	one-third.
—— fourteen years - - -	one-half.
—— twenty years - - -	two-thirds.
From twenty to sixty - - -	one.

Above this age, an inverse graduation must be followed.

The temperament of females being generally weaker than that of men, it is evident, after what we have just said, that they require rather smaller doses; but it would be difficult to fix precisely in what proportion.

The doses of remedies ought also to be modified according to the temperament and the idiosyncrasy of the patient; for we perceive at once that a very irritable person, possessing what we generally call a nervous temperament, will not bear, without inconvenience, the full dose of certain remedies, for instance, of an excitant nature, which may, on the contrary, be administered with advan-

tage to an individual of an indolent and lymphatic temperament. It is consequently very important to adapt proportionate doses to these different conditions. On the other hand, certain individual dispositions, unknown as to their nature, and the whole of which characteristics constitute the idiosyncrasy, are the causes that the same substances, administered in the same doses and under the same circumstances, do not always act in the same manner and with the same energy on all individuals. Thus it is, that very minute doses of opium produce on some persons all the symptoms of narcotism, whilst others are almost insensible to it. Half an ounce of any neutral salt is sufficient, in many cases, to produce an abundant evacuation, and even a super-purgation, whilst in other cases, two ounces, and even more, seem to remain without any effect whatsoever.

Finally, we must take into consideration the effects originating from habit, and remember that the organs submitted, for some time to the influence of a remedial substance, are very soon habituated to it, and even to such a degree as to become almost insensible to its action. This fact is proved, among other instances, by the enormous quantities of opium that some individuals are able to take, without experiencing any immediate accidents; many cases of this kind are to be found among the eastern nations.* It is by increasing gradually the doses of the substance employed, that we easily succeed in counterbalancing these effects of habit.

In the sequel of this work, we shall always indicate the dose of every medicinal substance which is commonly administered to an adult. We believe, that, from the preceding considerations, every one may easily be able to modify and graduate the dose to suit the case, and according to the experience and observation that he may have acquired in this respect.

§ 30. Remedies are either simple or compounded. We call simple those which may be administered in the same state as nature furnishes them, or are formed of a single substance, the intimate nature of which may, however, be more or less complex, as ethers, acetate of morphia, cyanuret of mercury, &c. The latter, on the contrary, are the result of a mixture of two or more simple remedies.

Remedies are mixed together in order to attain several ends: 1st. To increase the action of the principal substance we intend to administer; 2d, to lessen the too irritating action of a remedy, and avoid certain effects which would prevent it from fulfilling

* A most remarkable instance of this kind, was exhibited to us by Dr. Hodge, not long ago, in one of the female wards of the Alms-house. The woman, the subject of these remarks, had taken for several days in the course of twenty-four hours as much as ten table-spoonsful of black drop, being equal to at least from eight to ten drachms.—Am. Eds.

the indications we have in view; 3d, to obtain, at the same time, the effects of two or more different remedies; 4th, to compound a new remedy, the effects of which cannot be produced by any of the substances employed separately; 5th and lastly, in order to facilitate the administration of remedial substances. Let us now examine each of these cases in particular.

§ 31. *The action of a remedy may be increased, 1st, by mixing several preparations of the same substance.* When all the active principles of a remedy are not soluble in the same liquid, and that it cannot be administered in substance, recourse must be had to this kind of combination. Thus it is that most of the infusions and vegetable decoctions are rendered more active by adding to them a certain quantity of tincture or extract of the same plant.

2d. *By combining remedies of the same kind, that is, those which, taken separately, are able to produce similar immediate effects, but with less energy than when they are united.* This increase of activity is only positively evinced in a certain number of remedies. According to Valisnieri's observations, twelve drachms of pulp of the cassia fistulosa produce a purgative effect almost equivalent to that of four ounces of manna; but if eight drachms of the pulp of cassia and four of manna are united together, we shall then obtain a more powerful effect, and which may be even twice as strong. The mixture of diffusible aromatic substances is also capable of modifying the action of each of them. The same is also the case with antispasmodic, emetic, and cathartic substances, &c. as it is evinced by the action of a mixture of ipecacuanha and tartar emetic; finally, it sometimes happens that the mixture of two or more purgative substances diminishes the unpleasant accidents which the separate administration of each of them may induce, at the same time that it renders their action more certain and energetic. Thus the compound extract of colocynth of the American and English Pharmacopœiæ, which contains several drastics, is more active, and nevertheless much less irritant, than any of the substances of which it is compounded, taken separately.

3d. *By uniting the remedy with a substance of a different nature, which has no action upon it; but which renders the economy in general, the stomach or any other organ, more susceptible to impression.* It is much more easy to prove the truth of this proposition than to give an explanation of it; thus we shall confine ourselves to relating several instances. The mixture of ipecacuanha and jalap renders the effect of the latter much more energetic. The action of several purgatives is increased by associating with them a bitter principle. The elaterium, for instance, contains a principle *sui generis*, and a bitter sub-

stance almost inert by itself, but which, according to Dr. Paris's experiments, seems to increase considerably the energy of the purgative principle of the remedy to which it is united. Dr. Cullen has observed, that by infusing senna leaves with a bitter substance, we obtain from the administration of a small dose of this purgative, the same effects as when it is used alone in a larger quantity. The influence that opium exercises on the mercurial action is likewise very remarkable. It would even appear that, in some cases, the general effects of mercury, after disappearing completely, have returned under the influence of opium. A very curious instance of this kind is found in the ninth volume of Hufeland's Journal. An old woman, who had been submitted to a pretty long mercurial treatment, was affected with a considerable salivation every time she made use of opium; and, nevertheless, all the characteristic symptoms of a genuine mercurial action had completely disappeared for a long time.

§ 32. *The too irritant action of a remedy may be diminished, and, as it were, corrected:*

1st. *By its mixture with a substance which augments or diminishes its solubility.* It is thus that the addition of a small quantity of an alkali, diminishes the tendency that several drastic purgatives possess of producing colics, and that, by mixing gamboge with an insoluble substance, we prevent it from producing nausea by rendering its solution more difficult.

2d. *By its mixture with a substance capable of preserving the stomach, or the whole economy from its deleterious effects.* There are many substances of this kind which, when they irritate too violently the digestive canal, cannot be absorbed and are rejected, without having produced the desired effects. For instance, squill and the antimonial preparations, do not any longer act as diuretics or diaphoretics, when they induce vomiting or alvine discharges. It is therefore, very important, in these cases, to know how to associate them with substances capable of obviating this local action, and correcting their effects. Opium often fulfils this indication; at other times the aromatic stimulants are resorted to with advantage, or finally, the mucilages and emollient substances, which envelope, as it were, the active substances, and thus lessen the local action which is apprehended. It is on this account that corrosive sublimate, is always administered united with gum or in a mucilaginous vehicle, and that opium is combined with alkaline salts in order to prevent their purgative effect and to obtain a diuretic medication.

§ 33. *Remedies are mixed together in order to obtain simultaneously the effects of two or more of them:*

1st. *By using substances which, although they produce different effects, ultimately have often the same results.* For in-

stance, in order to increase the secretion of urine, remedies, the mode of action of which on the economy is altogether different, are often associated, such as calomel and squill, the former acts as all the mercurial preparations in general, by increasing absorption; whilst the latter spends its action especially on the kidneys.

2d. *By combining several substances the action of which is entirely different, and which are intended to fulfil various indications at the same time.*

With this object in view, purgatives are frequently united to antispasmodics; narcotics, tonics, mercurial preparations, &c. It often happens that the employment of tonics induces constipation, and for this reason it is often needful to join to it a purgative to compensate for and prevent this effect. In the treatment of ascites and chronic dropsies generally, there are cases in which it is necessary, to keep up at the same time, the strength of the patient, and to induce abundant alvine evacuations. We attain this double object by combining tonics and excitants with drastic purgatives. The union of purgatives and narcotics, is also employed with great success in the treatment of colica pictonum.

§ 34. *Two or more medicinal substances are combined to obtain effects, which could not result from either taken singly.*

1st. *By uniting remedies the action of which is essentially different, and which by their union produce on the economy effects different from those they would induce, exhibited singly, without however, acting chemically on each other.*

This effect seems to us inexplicable; but the instances are so numerous that we cannot doubt of its existence. We see that opium and ipecacuanha, exhibited in a proper manner, produce neither the narcotic effects of the one nor emetic effects of the other; but they act as a powerful diaphoretic.

2d. *By combining together substances which act either chemically on each other, and producing in this manner new compounds, or by bringing into full operation the active principles of one of them:*

For instance, by causing acetic acid to act on ammonia, we obtain a new product, the action of which is very different from that of either of these bodies taken singly. Dr. Rivière's anti-emetic draught, is a mixture of lemon juice and carbonate of potassa. This latter is decomposed by the citric acid which disengages from it the carbonic acid.

3d. *By mixing substances, by which the solubility of the principles in which their remedial properties reside, is increased or diminished.* This indication can be fulfilled through the agency of substances acting chemically, or mechanically. Thus, the supertartrate of potassa, or cream of tartar, becomes more soluble and consequently more active by the addition of boric

acid. Aloes acts more quickly, and irritates less the large intestine, when it is united to soap or to an alkaline salt.

§ 35. *Finally, our object, in the mixture of remedies, is frequently to impart to them, a more agreeable and efficacious form.*

The substances we mix with the remedies, in order either to render their taste, or their smell less unpleasant to the patient, or to prevent a too speedy spontaneous decomposition, or in order to facilitate their action, must vary according to the nature of the remedies to be exhibited, their degree of solubility, the object we have in view, and, to a certain degree, the caprice of the patient. They ought to be chosen, however, in such a manner as that their action may not prejudice the efficacy of the principal remedies. We shall have occasion hereafter to return to this subject.

§ 36. Such are the different objects we have in view, when we associate several simple remedies, in order to form a compound one. According to the indication these different substances are called to fulfill, they have received the name of *base; adjuvant* or *auxiliary;* of *corrective* and *excipient* or *intermediary.* The base is the principal remedy; the adjuvant is that which facilitates and accelerates its action; the corrective is intended to mitigate the too energetic action of the base; finally, the excipient serves as a vehicle, and the intermediary, a sort of excipient, is destined to render it miscible with water.

It is often unnecessary to employ, at the same time, all these elements in the formation of a compound remedy. Several substances need no adjuvant to facilitate their action, and others may be well administered without a corrective and even without a vehicle. It happens also that the same substance, answers, at once, several of these indications. The adjuvant, for instance, may serve, at the same time, as a corrective and a vehicle. These latter considerations are the more important, as simplicity is one of the most essential conditions in compounding pharmaceutical preparations.

We must never associate, in a formula, such substances whose reciprocal action upon each other and influence upon the animal economy, are not perfectly known; and we may farther advance as a general principle, that the more complicated a prescription is, the more uncertain are its effects. Thus, we must never combine remedies susceptible of answering in a positive manner the indications we have just mentioned, and we must always bear in mind this important maxim, *superflua nunquàm non nocent.*

§ 37. Pharmaceutical preparations are distributed into two large classes:

1st. The *officinal preparations;* that is, those the composition

of which is indicated in the pharmacopœiæ, and which are generally to be found ready prepared in all the shops.

2d. The *magistral preparations*, the composition of which is indicated by the physician, and that apothecaries prepare according to the formula given at the time.

§ 38. The *formula* or pharmaceutical prescription is the indication of the names and dose of the substances which are to enter into the composition of a magistral preparation, to which is often added the manner of compounding and administering it.

Clearness and conciseness are both essential conditions in writing prescriptions. They ought to be written in a legible hand, and in Latin, or in the vulgar language. The sign ℞ is commonly placed at the beginning of the first line. This sign is considered now as a contraction of the Latin word *recipe, take;* which in fact is nothing else but a remainder of astrological superstitions of the middle ages. Great importance was then ascribed to the pretended influence of the planets; and therefore the symbol of the star, under the prevalence of which the remedies prescribed were collected, was put at the head of the formula. Now the sign ℞ is that by which Jupiter was designated.

Every substance is then to be indicated by its scientific or pharmaceutic name, according as the one or the other is most generally known and least susceptible of being mistaken. The names of the remedies must always be placed under each other, taking care to write only one on the same line; the order in which they are placed is of little importance. It is better, however, to write first the most active ingredients. The designation of the dose must always follow the name of the remedy, and be placed on the same line, by leaving, however, a small interval between them. It may be written in full, but, in general, we make use of signs that custom has established, and which we represent in the following table. The quantity of each of the weights is commonly indicated by Roman cyphers. When the same dose of different substances is prescribed, they are united by a crotchet, and the word *ana* or *āā* is placed before the designation of the quantity common to both. Finally, the formula is terminated by indicating the mode of preparing the remedy, and the manner in which it is to be administered. When the preparation presents nothing particular, the pharmaceutic name which is to be given to it is simply inscribed, preceded by the letters F. S. A. *(fiat secundum artem.)* Otherwise, the mode of preparation is described as briefly as possible, and the date and name subscribed.

§ 39. The weights and measures used in medicine are not the same, and differ almost in all countries. As it is often of great importance in the practice of medicine to be acquainted with the real value that they represent, we have thought proper to give,

in the following table, a comparative view of the weights and measures used in America, by comparing them with those employed in Europe, and particularly in France.

[*A Table of the Weights of the American and principal European Pharmacopœiæ, converted into American Apothecaries Grains and French Grammes.*

United States and Foreign Pharmacopœiæ.				Apothecaries Grains.	French Grammes.
United States, London, Edinburgh, and Dublin Pharmacopœiæ.					
℔j.	pound	12 ounces		5760.	372.96
℥j.	ounce	8 drachms		480.	31.08
ʒj.	drachm	3 scruples		60.	3.88
℈j.	scruple	20 grains		20.	1.29
Gr.j.	grain	1 grain		1.	.065
French Codex.					
℔j.	pound	16 ounces		7722.	500.
℥j.	ounce	8 drachms		482.5	32.*
ʒj.	drachm	3 scruples		63.	4.
℈j.	scruple	20 grains		21.	1.3
Gr.j.	grain	1 grain		0.878	0.05
Italian Pharmacopœia. The Italian pound consists of twelve French ounces, and is subdivided as the French pound.					
Batavian Pharmacopœia.					
℔j.	pound	12 ounces		5701.	396.12
℥j.	ounce	8 drachms		475.	30.76
ʒj.	drachm	3 scruples		59.	3.84
℈j.	scruple	20 grains		19.66	1.28
Gr.j.	grain	1 grain		0.983	0.064
Austrian Pharmacopœia.					
℔j.	pound	12 ounces		6592.	420.36
℥j.	ounce	8 drachms		549.	35.03
ʒj.	drachm	3 scruples		69.	4.38
℈j.	scruple	20 grains		23.	1.46
Gr.j.	grain	1 grain		1.150	0.072
Danish and Swedish Pharmacopœiæ.					
℔j.	pound	12 ounces		5501.	356.22
℥j.	ounce	8 drachms		456.	29.68
ʒj.	drachm	3 scruples		57.	3.71
℈j.	scruple	20 grains		19.	1.23
Gr.j.	grain	1 grain		0.940	0.061
Pharmacopœiæ of Prussia, Russia, Finland, Poland, and of several German States.†					
℔j.	pound	12 ounces		5524.	357.66
℥j.	ounce	8 drachms		460.	29.80
ʒj.	drachm	3 scruples		58.	3.72
℈j.	scruple	20 grains		19.50	1.24
Gr.j.	grain	1 grain		0.970	0.062

* The authors of the French Codex have adopted this round number, in order to facilitate the subdivision of the minor weights.

† These weights are generally known by the names of *Nuremberg*, or apothecaries weights.

Measures of Capacity.			Apoth. Grains.	French Grammes.
United States, London, Edinburgh, and Dublin Pharmacopœiæ.				
C. Congius	Gallon	8 pints or 8 fluid lbs.	58443	3784
O. Octans	Pint	16 fluid ounces - -	7305	473
f.ʒ fluiduncia	fluid ounce	8 fluid drachms - -	456.5	29.68
f.ʒ fluid drachma	fluid drachm	60 minims - - - -	57.	3.71
♏. minimum*	minim	1 fluid grain - - -	0.9	0.061
French Codex.				
One litre or pinte - - -	℔ij.	2 French pounds	15444	1000
Half litre or chopine -	℔j.	1 do. pound	7722	500
Quarter of a litre or setier	ʒviij.	8 do. ounces	3861	250
One-eighth of a litre or half setier	ʒiv.	4 do. do.	1930	125
Cyath. or tumblerful - -	ʒv.	5 do. do.	2412	156.25
Cochl. maj. or table-spoonful	ʒv.	5 do. drachms	315	19.50
Cochl. min. or coffee-spoon†	ʒj.	1 do. do.	63	3.90
Gut. - drop - - - -	gr.j.	1 do. grain	0.878	0.055
The Swedish Kanne, Cantharus, contains 88 Swedish ounces - - - - - - - - - - - - - - - - - -			40128	2622
The Berlin Measure contains 36 Nuremberg ounces -			16560	1082.80

* The difference existing in the bulk of drops of various liquids had long been remarked, but no effort had been made to trace out the cause of this difference, which was merely attributed to the variable density of the fluids. Dr. Shuttleworth of Liverpool, seems to have been the first who ascertained by a series of experiments made on the weight of drops of different liquids the inaccuracy and danger of the practice of exhibiting active fluid substances in drops. An important change was soon after introduced by the College of Physicians of London, for the mensuration of liquids and the division of the wine pint, to insure accuracy in the measurement of quantities of liquids below one drachm. The subdivision of the wine pint, was, therefore, extended to the sixtieth part of the fluid drachm, and each division called a minim. The authors of the Pharmacopœia of the United States have adopted this measure, which, however, is still too generally mistaken, in this country, as equivalent to a drop, although it is only a measure of bulk.

In order to show the difference existing between minims and drops of various liquids, we have performed a series of experiments, with accurate instruments, and with the greatest care, on the principal liquid preparations of the Pharmacopœia of the United States, and on a few others peculiar to foreign pharmacopœiæ; which experiments we have further extended to ascertain the difference between grains and drops.

From the results we have obtained, we have been enabled to establish the following table, which we think may prove useful in the practice of medicine, by enforcing the necessity of abandoning entirely the erroneous method of prescribing in drops, and substituting for them the more uniform and certain mode of measuring by minims.

With respect to the size and weight of the drops of the various liquids, we may establish, as a general rule, from the following table; 1st. That the liquids which contain a *small proportion* of water afford also a *small drop;* while, on the contrary, the liquids containing a *large quantity* of water furnish a *large drop*. For instance, *concentrated acids, ethers, rectified alcohol, fixed* and *essential oils*, &c. which contain but a very small proportion of water, yield a *smaller* drop than *diluted acids, weak alcohol, wine, vinegar*, &c. 2d. That amongst the liquids containing a *large proportion* of water, those which are not charged with remedial substances give a *larger* and *heavier drop* than these same liquids containing extraneous bodies in solution. For instance, *weak alcohol, wine, vinegar*, and *water*, furnish a *larger* and *heavier* drop than the *tinctures* prepared from them.

† The French coffee-spoon is larger than our tea-spoon.]

[Table showing the difference between Minims, Drops and Grains, of various Medicinal Liquid Preparations of the Pharmacopœiæ of the United States, &c.

	Number of drops in 20 minims.	Number of minims in 20 drops.	Number of drops in 20 grains.	Number of grains in 20 drops.
Sulphuric Acid	30.	13.3	25.	16.
Sulphuric Ether	50.	8.	60.	6.
Rectified Alcohol	46.	8.6	57.	7.1
Nitric Acid	28.	14.2	22.2	18.
Acetic Acid, (crystallizable)	40.	10.	40.	10.
Muriatic Acid	18.	22.2	18.1	22.
Oil of wormseed, (Chenopodium anthelminticum)	40.	10.	50.	8.
of peppermint, of aniseed	40.	10.	43.5	9.
of sweet almond, olive, palma christi				
of cloves	40.	10.	36.	11.
of cinnamon	40.	10.	32.	12.5
Copaiba	40.	10.	40.	10.
Diluted Alcohol	40.	10.	42.	9.5
Tincture of hydriodate of potassa	40.	10.	43.	9.3
of cantharides, kino, and digitalis				
of assafœtida, sulphuric acid, colchicum				
of opium, valerian, guaiacum, &c.				
(volatile) of valerian, of guaiacum	40.	10.	50.	8.
of muriate of iron	44.	9.1	50.	8.
Wine, (Teneriffe)	26.	15.3	25.	16.
(Antimonial)	24.	16.6	26.	15.3
of opium, (Sydenham's laudanum)	26.	15.3	29.	13.7
of colchicum root	25.	16.	29.	13.7
of colchicum seeds				
Vinegar, (distilled)	19.	21.	20.	20.
of opium, (black drop)	26.	15.3	25.	16.
of colchicum				
of squill				
Water, (distilled)	15.	26.6	17.5	24.5
solution of hydrocyanic acid*	15.	26.6	17.5	24.5
sulphuric acid, (1 to 7)	17.	23.5	17.	23.5
nitric acid do.	17.	23.5	17.	23.5
ammonia, (strong)	18.	22.2	18.5	22.
do. (weak)	15.	26.6	20.	20.
hydriodate of potassa	18.	22.2	20.	20.
arsenite of potassa	19.	21.	20.	20.

§ 40. We ought now to examine the different pharmaceutic preparations to which remedies are submitted, and the forms under which they are administered; but, previously, we think it necessary to call the attention of our readers to the errors which might be committed in compounding magistral preparations, errors, which proceed from three principal sources, viz.

1st. *The association of substances which cannot mix together, or form compounds of an uniform and suitable consist-*

* Prepared according to the process of the London Apothecaries' Hall.

ence. Many substances, insoluble in water, can be exhibited in the liquid form, only with the assistance of an *intermediary*,* such as mucilage or albumen, which serves to suspend their particles. Should the physician omit to prescribe the *intermediary*, the formula would not produce the desired effect. The same would happen, if camphor and balsam of copaiba were prescribed in the form of pills, without adding to them a suitable *intermediary;* for, both these substances, rubbed together, assume a syrup-like consistence, and it would be impossible to form a pilulary mass, if a little coagulated yolk of an egg was not added to them.

2d. *The association of substances which decompose each other, and the remedial action of which is in this manner changed, or entirely destroyed.* As often as two salts in solution are mixed together, which, by the exchange of their base, and of their acid, are able to form a soluble and insoluble salt, or two insoluble salts, there is necessarily a decomposition. As it would be difficult to point out here all the substances which are incompatible with each other, it is our intention to mention particularly this property, when we give the particular history of each of these substances.

3d. *When the method indicated for the preparation of remedies is not sufficient to attain the object we have in view, or is of a nature to change, or to destroy the action of the substances employed.* Some remedies are only soluble in alcohol, ether, or oil; others are soluble in water, but only with the assistance of caloric; others finally lose their active properties by the sole effect of ebullition. It is therefore of the highest importance not to prescribe that an infusion should be made with cold water of a substance which is only soluble in this liquid when warm; and likewise not to prescribe a decoction of substances which are altered by ebullition, or which lose their virtues by this means, &c. When we describe each substance, we shall indicate the menstruum which it is best to use, and the form under which they are to be exhibited.

Of the Choice of Simple Remedies.

§ 41. The composition of mineral substances being always the same, it is of little importance to the physician to know whence they come, provided they be as pure as possible; but the medicinal properties of plants, varying considerably, according to

* [We have adopted this word, because it obviates the necessity of using a long phrase. It signifies the substance, the particles of which are interposed between those of an article either difficult to pulverise or to suspend in a liquid; and by the addition of which these two ends are attained.]—Am. Eds.

many circumstances, it is necessary to detail here some general rules which must be attended to in the choice we make of them.

All plants, in the first stage of their existence, present a composition almost analogous, and contain scarcely any thing more than mucilage. The same happens when they are deprived of the vivifying influence of the solar rays. In this case, their leaves do not exhibit the green colour which is natural to them; they are almost inodorous and insipid; in short, they are bleached. It is then very important not to collect them at this time or in this diseased state, if it be our intention to employ the active principles they may contain when they shall have attained their full growth, or are in a healthy state.

The annual and biennial plants must be gathered in autumn; the perennial roots, on the contrary, must be collected in the spring.

The ligneous stems contain the greatest portion of active principles before the unfolding of the buds, or after the fall of the leaves. In the herbaceous stems, the medicinal properties are on the contrary more concentrated after the foliation and before the blossoms appear.

Barks ought always to be taken from trees which have attained their full growth, and may be collected in the fall or spring.

Flowers must, generally, be collected before they are in full bloom; and as the time of their blooming varies in the various plants, we have therefore indicated it in the history of each one in particular.

As to the choice of remedial substances which are found in commerce, we must be guided by their peculiar character, which we will carefully describe in the sequel of this work.

Most plants do not lose their medicinal properties by desiccation; there are some even, the activity of which, seems to be increased by this operation. But it must be carefully executed; and it has generally been remarked that the quicker this operation was performed, the better. Plants may be dried either in the air, or in a warm room, according as the quantity of moisture, which they contain, is more or less considerable.

§ 42. It is scarcely possible to administer remedies in the same state as furnished by nature: their form, volume, hardness, their state of impurity, &c. prevents it. It is consequently necessary to submit them to certain preparations, either in order to change their state, or to develope and render more sensible their virtues, or finally, to impart to them some new properties by combining these articles with others. It is by means of comminution, extraction, solution, mixture and combinations, that these objects are attained.

§ 43. The mechanical division or comminution of a remedial substance may be obtained, 1st, by bruising; 2d, by cutting; 3d, rasping or filing; 4th, grinding; and 5th, by pulverization.

The *bruising* of a substance is performed by means of a pestle, or any other hard body, which reduces it into fragments more or less voluminous. *Cutting*, is a division by means of a knife, or saw; that performed with the file or the rasp, is called in pharmacy *filing* and *rasping*, and which as well as *grinding*, are so many analogous operations, the purpose of which is to facilitate the extraction of the active principles by the increase of the surface of the substance in contact with the liquid, to the dissolving action of which it is submitted.

The *pulverization*, or reduction of a solid body into a powder, may be performed by *concussion*, *trituration*, *porphyrization*, *friction*, or by an *intermediary*. In order to pulverize very hard substances, such as woods, roots, barks, &c. we employ *concussion* or bruising; for this purpose they are put into a mortar and beaten powerfully with a pestle. The substances which are very brittle and might become soft and adherent in consequence of a higher temperature, produced by a violent percussion, such as resins and gum resins, ought on the contrary, to be triturated or pounded in a mortar with a pestle. In the first instance, this latter instrument is caused to act perpendicularly; whilst, in the latter, that of pulverization by *trituration*, it is only necessary to give to it a rotatory motion on the sides of the mortar.

Porphyrization or *levigation*, is an operation by which very hard substances, such as iron, crabs eyes, &c. are reduced to an impalpable powder by grinding them with a muller on a table of porphyry or marble; but before subjecting them to this operation, they must be previously coarsely pulverized. When the substance which is levigated or porphyrized is not altered, nor dissolved by water, a small quantity of this liquid may be added to facilitate the operation; but, on the contrary, should the substances be operated upon by water, they must be porphyrized in the dry state.

Pulverization by *friction* is accomplished by constantly rubbing on a hair sieve the substances which are to be reduced to powder. This operation is applicable only to a very small number of substances, such as magnesia, white agaric, &c. and the particles of which have a very weak adhesion to each other. Finally, in order to facilitate the pulverization of several substances, it is necessary to mix with them some foreign bodies, intended to absorb either the moisture, or to interpose it between their particles; and this is called *intermediary*. This substance must be of such a nature as not to change either the medicinal or chemical properties of the one which is to be reduced to pow-

der. Without an intermediary, it would be almost impossible to pulverize camphor; but with the assistance of a few drops of alcohol, nothing is more easy. Sugar is the intermediary employed to pulverize vanilla, silver leaves, &c.; finally, in order to obtain calomel in an impalpable powder, it is reduced to vapour, which is thus received in water.

We administer in the form of powder, 1st, the insoluble substances which, during their passage in the alimentary canal, scarcely experience the alterations it is needful for them to undergo, in order to produce their therapeutic effects; 2d, those the different active principles of which are not soluble in the same menstruum; 3d, those which would be capable of irritating powerfully the surfaces with which they come in contact, if they were not in a state of extreme division.

The degree of comminution of powders has a great influence on their *modus operandi*. Thus, as Virey has remarked, the unpulverized hellebore produces vomiting; whilst reduced to powder, it acts as a purgative. Generally, the extreme degree of pulverization promotes the action of all the substances, the active principles of which are not soluble; whilst it prejudices the activity of those, the active principles of which are of a volatile nature, or which combine easily with oxygen.

Powders may be either simple or compound.

§ 44. Extraction is the operation by means of which we separate from a substance one or more of its constituent parts. It is performed by *calcination*, *carbonization*, *torrefaction*, *sublimation*, *clarification*, *expression*, *washing*, *crystallization*, *inspissation*, and *distillation*.

A substance is *calcined*, when it is exposed, for a certain time, to a very high temperature, in order to deprive it of all the volatile principles it contains, or might result from the decomposition of some of its fixed principles. Thus, alum is calcined to deprive it of its water of crystallization; carbonate of magnesia, to reduce it to the state of an oxide and deprive it of its carbonic acid; hartshorn, in order to destroy all the organic substances it contains and to obtain separately the calcareous particles.

Carbonization is a similar operation; but carried to a greater extent. It is intended to decompose the organic substance and to reduce it to a carbonaceous mass. Burnt sponge, for instance, is prepared in this way. *Torrefaction* is another process, and is only the beginning of carbonization, which is used in order to alter the properties of some substances, or to deprive them of moisture and induce among their principles a more intimate combination. Thus, rhubarb loses by torrefaction a good deal of its purgative principle, which is volatile and becomes essen-

tially astringent; whilst, on the contrary, coffee acquires more activity.

The end of *sublimation* is entirely the opposite of that of calcination; in fact the object of the latter operation is to obtain the fixed parts of a substance by expelling its volatile principles, whilst that of the former is to collect the volatile product. This operation is performed by submitting to the action of caloric, in close vessels, the substances from which it is intended to extract the volatile principles, which condense in a solid mass at the superior part of the apparatus. Thus are prepared the flowers of sulphur, corrosive sublimate, &c.

Clarification or the separation of the insoluble particles that prevents a liquid from being transparent, may be performed by *depuration*, *filtration*, or *coagulation*. In the first of these operations, the liquid is permitted to subside without being in the least disturbed, until all the particles which were in suspension are precipitated; it is then decanted. This mode of clarification can only be used when the substance on which we operate is in a large quantity; or is of a nature not to be altered during the time necessary to complete this operation, and finally when its specific gravity is less than that of the particles which renders it turbid. *Filtration* is a process by which a liquid is strained through a body, the interstices of which are small enough to stop the solid particles contained in it. Filters of wool, linen, paper, powdered glass, sand or charcoal, may be used, according as the liquid is more or less dense, or of a nature to operate upon any one of these bodies. Finally, clarification by *coagulation* is performed with the assistance of albumen contained in the liquid, or some is added to it for this purpose, which, by the action of caloric, of acids, &c. becomes solid, forms into a mass and precipitates the extraneous substances. The white of eggs is generally used and preferred for this purpose.

Washing is used to separate substances already pulverized and of different specific gravities. The mixture is thrown into water, well stirred and then set to rest; soon after the heavier powder precipitates to the bottom of the vessel, whilst the other remains in suspension; it is then decanted. The operation may be repeated several times if found necessary.

Crystallization is an operation in which the particles of a substance, liquid or gaseous, come in contact in such a way as to induce the formation of a regular solid, called *crystal*. It may be performed through the agency of caloric or some liquids, such as water or alcohol. In this case, the crystals are deposited either at the time of the cooling of the liquid which is saturated with them, and which cannot hold in suspension so much of the

substance in a cold as in a warm solution, or by its more or less slow evaporation. This process can be used not only in order to purify some substances, such as salts; but also to separate those which are not endowed with the same degree of solubility; for in every instance the least soluble substance crystallizes the first.

Expression is a mechanical operation, by means of which the juices contained in substances are separated. Sometimes it is sufficient to bruise the vegetables from which we wish to extract the juice, and to submit them afterwards to a gradual pressure, at other times a small quantity of water is necessary to be added to them.

Inspissation consists in the evaporation of a portion of water, containing in solution some remedial principles; it is thus that extracts or jellies are prepared.

Extracts are preparations containing all the soluble principles of the substance out of which they are formed, and which have acquired by evaporation a consistence varying from that of honey to complete dryness. They are obtained, 1st, by evaporating the expressed juice of green plants, after having been clarified; 2d, by dissolving in any menstruum whatsoever, by maceration, digestion, or infusion, but never by decoction, the soluble parts of dry substances, and submitting afterwards the product, thus obtained, to evaporation, either in the water bath, or by the assistance of steam.

Water or alcohol are used as vehicles; hence we have *aqueous* or *alcoholic* extracts.

Jellies are mucilaginous preparations which become liquid by the action of caloric, and acquire again a certain consistence on cooling. They are soluble in boiling, and slightly so in cold water. They are prepared from vegetable or animal substances.

Distillation is a process very similar to sublimation, which we have already mentioned, and which is used in order to separate the liquids which are evaporated at different temperatures. The forms of distilling apparatus are extremely variable; but however they are always composed of two principal pieces, the one in which the liquid to be reduced to vapour is heated; the other the temperature of which is, on the contrary, diminished in order to condense the vapours and bring them back again to the liquid state. This process is performed for purifying water and for preparing the various distilled waters, alcohol at different degrees, several essential oils and distilled vinegar. The name of distillation is likewise applied to the operation by which we decompose, by the action of caloric, several substances, such as amber and hartshorn, in order to obtain their volatile principles.

The *distilled waters* of plants are prepared by distilling water upon a plant, or one of its parts. This liquid becomes impregna-

ted, in this manner, with a certain quantity of volatile principles, which, in general, are essential oils. Thus the most fragrant plants give to water the most positive medicinal properties.

The *alcohols* or *spirits*, are preparations similar to the preceding; except that alcohol is used instead of water as a dissolvent of the odorous volatile principles which we wish to obtain. The alcohols have a weaker odour than the distilled waters; but they become very strong by the addition of a little water, which, in most cases, ought not to destroy their transparency. They are divided into *simple* or *compound*, according as they have been prepared out of one or more substances.

Solution is the change of state that a solid substance undergoes by means of the comminution and disaggregation of its particles by the interposition of any liquid whatever, without, however, experiencing any alteration in their intimate nature. The liquids employed as dissolvents are, water, alcohol, ether, wine, vinegar and oils.

Dissolution may be produced—

1st. By *maceration*, that is, by letting the liquid act, for a certain time, at a mean temperature, upon the substance which is to be dissolved.

2d. By *digestion*, an operation which differs only from the preceding by its longer duration, and by the temperature being as high as from 35° or 40° centigrade; (from 95° to 104° Fahr.)

3d. By *infusion*, that is, by pouring a liquid more or less warm on the substance from which we wish to extract the remedial principles. The temperature and the duration of this operation varies according to the nature of the substances.

4th. By *decoction*, or by boiling for a sufficient time, the substance in the liquid.

It is through one of these operations or processes that we obtain tisans, broths, artificial mineral waters, simple or compound medicinal wines and vinegars, alcoholic and ethereal tinctures, the medicated oils, syrups, oxymels, &c.

Water, slightly charged with remedial principles, and prescribed to sick people as common drink, is called *tisan* or tea. The action of these tisans is, generally, very trifling; and they are used only as auxiliary means. As their use is to be continued for a certain time, they must often be changed and rendered as little unpalatable as possible. Therefore, it is sometimes necessary to clarify and edulcorate them in order to correct their insipidity or their unpleasant taste.

Tisans are prepared by decoction, from green or inodorous substances, such as burdock, or succory leaves, &c. or from hard substances, such as barley, rice and other seeds.

Dry flowers and aromatic substances are made into infusions;

but when we wish to obtain together their extractive and volatile principles, we combine both these modes of manipulation.

Finally, we macerate substances soluble in cold water, such as gum, rhubarb, &c.

Apozems differ from tisans in this particular, that they are more loaded with remedial principles, and that they are never used by patients as a common drink. They are, however, prepared in the same way.

The *medicinal broths* are aqueous solutions of the proximate principles of animals, and are prepared so as to be but little nourishing, light and cooling.

The *artificial mineral waters* are obtained by dissolving in water a gaseous or saline substance, in sufficient quantity to communicate to it their medicinal properties. We generally attempt to imitate nature as much as possible in their composition.

We call *alcoholic tinctures* the solutions of the active principles of remedies in alcohol. They are always prepared by digestion in close vessels. The degree of strength of the alcohol employed for this purpose varies from 22° to 40° of *Baumé's* areometer, according to the nature of the substances upon which we wish it to act. The latter must generally be dry, in order that the water they contain may not weaken the alcohol; and must also be bruised or powdered to facilitate the dissolvent action of this liquid.

Tinctures are simple or compound, according as they contain one or more substances in their composition. The proportion of alcohol employed in the preparation of tinctures, varies considerably.

The *ethereal tinctures* differ from the preceding ones only in this respect, that instead of alcohol, rectified sulphuric ether is used as a dissolvent.

Wine acts upon remedial substances, nearly in the same way as a mixture of alcohol and water would do, and consequently may dissolve the active principles of a great many remedies. These preparations have received the names of *medicated wines;* and they are always made with the best red or white wines. As in the preparations of tinctures, it is always necessary to use desiccated substances, unless, however, desiccation may alter their properties, as it happens in the plants called *cruciferæ;* and in this case we must add a certain quantity of alcohol, in order to counterbalance the water they contain. It is always by maceration, and in close vessels, that medicated wines are to be prepared. In order to obviate the inconveniences which might result from the spontaneous decomposition of the wine, and the differences it presents, with respect to the proportions of alcohol it contains, Parmentier has proposed to prepare the medicated wines by adding to them a fixed quantity of the alcoholic tincture of the re-

medial substance. Medicated wines may be either simple or compound.

When vinegar is used as a dissolvent of the active principles of remedies, we obtain the *medicated vinegars*. The rules we have just mentioned for the preparations of wines are applicable to vinegars.

Medicated oils are prepared by dissolving the active principles of one or more medicinal substances, in a fixed or essential oil. Olive oil is the one most commonly used. Odorous substances are macerated in it; but digestion or decoction are necessary when they are in a green state.

Syrups are viscous liquids, in the composition of which we commonly put two parts of sugar to one of any liquid whatsoever. It is generally the water charged with the remedial principles of plants, which is used in the preparation of syrups. The processes followed in the preparation of syrups, vary according to the nature of the remedies employed in their composition; consequently they may be prepared with or without heat. These preparations are likewise simple or compound.

Mellita are preparations in which honey is used instead of sugar. *Oxymels* are other species of syrups, made from honey and vinegar.

§ 45. There are other compounds which can only be classified according to their degree of consistence: 1st. They are *solid*, such as *powders*, *troches* or *lozenges*. 2d. *Liquids*, as *emulsions*, *loochs*, *mixtures*, *gargles*, *collyria*, *fomentations*, *lotions*, and *injections*. 3d. *Soft*, viz. *electuaries*, *marmalades*, *pastes*, and *poultices*. 4th, and lastly, *fatty*, such as *cerates*, *salves*, *ointments*, *balsams*, and *plasters*.

1st. *Of the solid compounds.*

Powders, as we have already observed, are simple or compound; the latter are made from different remedial substances, reduced to powder, either to facilitate the division or to serve as a vehicle to the principal remedy, or to answer to the indications we have mentioned in § 30 and 31. We must never introduce into these preparations saline substances, on account of their affinity for the moisture of the air, or of the large quantity of water of crystallization they contain, which may spoil or alter the other ingredients.

Powders are seldom administered alone. They are commonly suspended in a liquid, or incorporated with syrup or honey, to form electuaries or boluses.

Troches or *Lozenges* are remedial substances which owe their consistence to sugar and a mucilage.

2d. *Liquid compounds.*

Emulsions are magistral preparations white and milky, com-

posed of a certain quantity of fixed oil, kept in suspension in water, by means of albumen, sugar, &c. We employ for their preparation several oily seeds, and more especially sweet almonds.

The suspension in water of a fixed or volatile oil, of a resin, of a gum resin, or of a balsam with the assistance of any intermediary whatsoever, constitutes also a kind of emulsion. These preparations serve very often as excipients to substances insoluble in water, such as kermes, camphor, &c. Care must be taken never to mix with them either acids, or alcohol, which would produce a coagulation.

Loochs simply differ from emulsions by the addition of a mucilage, which increases their consistence.

Juleps are compounds of a viscous and oleaginous consistence, in the composition of which enters generally, a large proportion of syrups. These preparations are seldom prescribed as common drink, and are commonly administered in small doses, and at stated periods.

Mixtures are the result of the union of several liquids, such as distilled waters, infusions, decoctions, &c. with syrups, to which are added tinctures, electuaries, salts, &c. They are only compounded with liquids, and by mixing them well together, by simply shaking them.

Gargles are liquid compounds, destined to act locally on the mouth or throat; but they are not generally to be swallowed by the patient. Under the name of *collyria* are comprehended all the pharmaceutical preparations intended to act upon the eyes. They may be dry, soft or liquid, the first are impalpable powders; the second, salves, and the third are prepared with distilled water or with saline solutions.

Fomentations or *lotions* are kinds of local baths, the former are always administered warm, by means of pieces of linen or flannel, which are permitted to remain on the part for more or less time; the latter are used only to wash the diseased parts.

We call *injections* liquid remedies, which are thrown into a natural or accidental cavity of the human body, by means of a syringe. They are called *enemata* or *glisters*, when they are intended to be introduced into the larger intestine.

3d. *Soft compounds.*

Electuaries are formed by mixing pulverized remedial substances, which are incorporated together with pulps, juices, extracts, sugar or honey. These preparations are either simple or compound. The former have received the name of *preserves*, and are made with sugar and a single vegetable substance pulverized or reduced into a pulp. The composition of the latter varies very much, and they are called *confections*, and *opiates* when opium becomes one of the constituent parts.

Pastes are compounds having for base gum and sugar dissolved in water charged with remedial principles, and dried to a consistence to be handled without adhering to the fingers.

Pills are small round masses, (from one to six grains) of a consistence sufficient to preserve the globular form. They are generally compounded of pulverized substances, the particles of which are united by the addition of an extract, a syrup, a mucilage, &c. This form is especially adapted to the administration of substances, 1st, possessed of an unpleasant smell or taste; 2d, acting in very small doses; 3d, intended to act slowly and gradually; 4th, which are to be prevented from dissolving too easily; 5th, from acting before they have arrived in the large intestine; 6th, and lastly, the specific gravity of which is too great to be susceptible of being suspended in an aqueous vehicle. On the contrary, we must never exhibit in the form of pills, the substances, 1st, which act only in large doses; 2d, which attract the moisture of the air; 3d, the consistence of which is such as not to require a large quantity of inert powder to form a pilulary mass; and 4th, which are so little soluble that, in a solid state, they pass through the digestive canal without being altered.

Boluses differ from pills by their large volume and lesser consistence.

Cataplasms or *poultices* are soft compounds, intended to be applied to the surface of the body. They are commonly made of meals, powders, boiled pulps, &c. either mixed with water, milk, or any other liquid. They are called *sinapisms* when mustard forms their base.

4th. *Fatty compounds.*

Cerates are compounds of oil and wax, melted together, to which are sometimes added a small quantity of water, extracts, salts, &c.; their consistence is always soft.

Liniments are preparations in which an unctuous body serves as an excipient to a more active remedy, and which are employed in frictions or embrocations on the skin.

Salves are merely lard or any other animal fat, united to some remedial principles. Vegetable or animal substances are dissolved in them: those compounded with mineral substances are generally simply rubbed together. Indeed, in pharmacy, we distinguish the salves made by solution, which are prepared with the assistance of caloric, from those by incorporation, which are made by trituration.

Ointments or *balsams* are the result of the combination of fatty bodies, such as axungia, with a resinous substance. Their consistence is greater than that of salves; but the heat of the body

is sufficient to melt them. Some salves are commonly called ointments.

Plasters, like ointments, have for base a fatty substance; but they are solid, tough, and stick to the skin, without melting. Some are composed of wax and resin; others are the product of a chemical combination, which takes place betwixt the oleic and margaric acids developed by the saponification of fat substances, and the metallic oxides with which they are mixed. In the Parisian codex, the former are described under the appellation of solid ointments, and the latter under that of plasters.

Finally, *suppositories* are solid remedies, of a conical form, intended to be introduced into the rectum and to remain there for a certain length of time, to act as emollients or as purgatives. Suppositories are commonly made of ointments or salves applied to a roll of lint, or a piece of soap cut in a proper shape, is used for this purpose.

§ 46. As to the chemical combinations through the agency of which, several remedies are prepared, we cannot now say any thing about them; we shall mention them in the history of each of these substances.

Of the Classification of Remedies.

The object of every classification, in the natural sciences, is to collect together and unite in groups, the objects which have the greatest analogy with each other and more or less resemblance in certain respects. This methodical arrangement of bodies, according to one or more of their properties, contributes greatly to facilitate study and to assist the memory; for, if the classification is good, it is sufficient to be well acquainted with one of the articles of each group in order to possess a general idea, more or less correct, of all the others. A classification to be really useful, ought therefore always to be based on the properties, the knowledge of which is the object of the science to which they appertain; and since, in the different branches of the natural sciences, we consider the bodies under very different points of view, it is evident that each of them requires a particular classification. The application then, that some authors have made of the same classification to natural history, chemistry and pharmacology, is very improper. In fact, the object of the first, is to study the exterior forms of bodies; that of the second, their elementary composition and the phenomena of their combinations; finally, the object of the third, is to acquaint us with their effects upon the animal economy; effects which have frequently no compatible relation with their physical and chemical properties.

It was soon discovered that it was impossible to succeed in ar-

ranging remedies according to a methodical order, otherwise than by establishing, for their base, the mode of action they had on the economy. But, in this classification we meet with a great number of obstacles, and the numerous classifications which have been from time to time proposed, are all more or less defective. The following examples will be sufficient to give us an idea of the justness of our remarks. Some have arranged remedial substances according to the specific virtues which were ascribed to them for some particular disease, and have in this manner, established classes of febrifuges, antiscorbutics, antiarthritics, antisyphilitics, &c.; others, taking for base certain secondary effects which may result from the action of remedies, have established nearly as many divisions as there are curative means; and under the names of bechics, expectorants, emmenagogues, hydragogues, incisives, &c. they have collected confusedly all the substances which, upon the whole may facilitate expectoration, or excite the menstrual flux, &c. whatever might be, in other respects, their nature and primitive action upon the system.

The rapid progress the science has made since correct observation has succeeded vague or hyphothetical explanations, has enabled the cultivators of this science to reject all these erroneous views. It is now acknowledged by the better informed, that the only rational basis on which a classification of remedies can be erected, are the physiological changes, effects or results they produce on the action of the organs. Nothing would then be more easy than to establish, according to these *data*, a classification really useful, if we were perfectly acquainted with the primitive action of every remedial substance on the economy; but unhappily our knowledge, in this respect, is as yet very far from this state of perfection. We believe, with Mr. Cap, an apothecary of Lyons, whose memoir upon this subject has been crowned by the Medical Society of Paris, that in the present state of the science, it is impossible to arrive at an accurate classification of remedies. That which we have adopted in this work is therefore, very imperfect and liable to many objections; but such as it is, we think that it may facilitate the study of materia medica, and at the same time, that it is not divested of usefulness in the practice of medicine.

Remedies are divided into:

1st. Caustics, which, by their chemical action, disorganize the parts of the body with which they come in contact.

2d. Rubefacients and Epispastics, which induce the inflammation of the parts to which they are applied, without disorganizing them.

3d. Astringents, which, applied to the living tissues, produce a contraction of the fibres of the tissues, and have a simple local action.

4th. Tonics, which, by their general action, have a tendency to increase the energy of the organs.

5th. Excitants or Stimulants, which stimulate the tissue of the organs, and augment the activity and rapidity of their functions. They are subdivided into—

General: the stimulating action of which is felt by the whole economy; and,

Special: which act more especially upon one or more organs, such as the kidney, the skin, the nervous system, &c.

6th. Narcotics, soporifics or stupefiers, which act especially upon the nervous system, and which have a peculiar tendency to lessen its activity, or even to suspend, momentarily, its functions.

7th. Emetics, which excite the contraction of the stomach and of the abdominal muscles, and thus produce vomiting.

8th. Purgatives, which induce over the internal surface of the intestines, a transient and moderate irritation, productive of alvine evacuations.

9th. Laxatives, which produce alvine evacuations; but by acting rather as emollients than as irritants.

10th. Temperants, which moderate the too great activity of the organs, and more especially the rapidity of the circulation.

11th. Emollients, which tend to soften the tissues with which they are in contact.

12th. Anthelmintics, which, without acting in a decided manner upon the economy, produce the death or evacuation of the intestinal worms.

CHAPTER II.

Caustic Substances.

THE name of *caustic*, *causticus*, (from καίω, I burn,) is given to substances which, by their chemical action, disorganize the parts of the body with which they are put in contact. They are called likewise *potential cauteries*, to distinguish them from the fire called *actual cautery*.

They were once divided into *escharotics*, (ἔσχαρα, *eschar*, slough,) which act powerfully; and into *catheretics*, (καθαιρέω, I gnaw,) the action of which is less energetic; but this distinction cannot be any longer admitted, because the action of these bodies is susceptible of varying, and varies in fact, according to numerous circumstances, such as their degree of concentration, the duration of their contact, &c.

Caustics, in general, act by decomposing chemically the tissues to which they are applied, by depriving them of life, and producing a real local and circumscribed gangrene, called eschar, or slough. Those, the action of which is powerful, for instance, caustic potassa, concentrated sulphuric acid, &c. produce these phenomena with such rapidity, that inflammation takes place only after the formation of the eschar; whilst, on the contrary, inflammation is the immediate consequence of the less energetic caustics. In both cases, suppuration occurs sooner or later, and separates the disorganized from the surrounding parts.

Almost all the substances used as caustics have only a local action; some, however, are capable of being absorbed, and of carrying their deleterious action on the economy in general; arsenical preparations are an instance of it.

The employment of caustics is now confined to a small number of cases. The actual cautery, or the knife, are, in general, preferred to them. They are used principally in order to establish issues, particularly in cases in which it is necessary to produce a powerful derivation; to stop the progress of certain gangrenous affections, such as *anthrax;* to open certain indolent abscesses; to change the mode of vitality of the skin in some cancerous or herpetic ulcers; to destroy the excrescences of wounds or proud flesh; and, finally, to prevent the absorption of the virus deposited at the surface of poisoned wounds.

Caustic Potassa. *Potassa fusa. Lapis causticus.* Impure hydrate of protoxide of potassium. Caustic kali with lime. Common caustic.

P. P. Flat, irregular, brittle pieces, or in round sticks, like the nitrate of silver; of a grayish-white, sometimes reddish, of a savour extremely caustic, and a slight odour *sui generis*.

C. P. The caustic potassa is composed of protoxide of potassium 100 parts; water 25; besides a little sub-carbonate, sulphate, and hydrochlorate of potassa, of silica, &c., it possesses the alkaline properties in the greatest degree; that is, it converts the colour of the syrup of violet into a green colour, restores the blue colour of the tincture of litmus reddened by an acid; it reddens turmeric paper, or the yellow vegetable colours; exposed to the air, it attracts quickly the carbonic acid and moisture of the atmosphere, and is thus converted into a very deliquescent sub-carbonate. It is very soluble in water and alcohol, combines with fatty substances, and forms with them soft soaps; finally, it fuses below red heat.

Prep. Treat the potassa of the shops, (impure sub-carbonate of potassa,) dissolved in twelve or fifteen times its weight of water, with an excess of quick-lime; filter the liquor; evaporate rapidly, and pour out on a marble slab, or into iron moulds; when it becomes hard, break it and keep it in well-stopped bottles.

Th. E. This substance is extremely caustic; it decomposes quickly the parts with which it is put in contact, and it leaves on the skin a soft grayish eschar, which comes off slowly. Advantage is taken of this action to establish issues, to open indolent abscesses, or such as are accompanied with induration of the surrounding parts, to cauterize poisoned wounds, &c. Taken internally, it acts in the same way as all corrosive poisons; it has nevertheless been administered, in very dilute solutions, as an antacid, diuretic, and lithontriptic. It has succeeded in the gravel, in nephritic colics, and other affections proceeding from superabundance of uric acid. It has been recommended likewise in the treatment of scrofula and in some diseases of the skin, such as leprosy, &c. This solution, even when very diluted, soon irritates the stomach, and brings on anorexia, which prevents it from being used for any length of time.

D. & M. of Adm. *As a caustic.* A piece of the size of a lentil.——*Internally. Liquor Potassæ*, L., E., D., P. (Caustic potassa, 1 part; distilled water, 10.) From ♏. v. to xx. in ℥vj. of mucilaginous menstruum.——*Tinctura Kalina*, Pol. (Caustic potassa, 1 part; rectified alcohol, 6.)

Caustic Soda. *Soda.* Protoxide of sodium. Its physical properties are similar to those of potassa, and it may be used with advantage as a succedaneum when employed as a caustic. In fact, the sub-carbonate which forms during its action on the skin, is not deliquescent as that of potassa, and consequently is not subject to spread.

Melted Nitrate of Silver. *Nitras argenti fusus.* Lapis infernalis. Lunar caustic. Not to be found in nature.

P. P. Small cylinders two or three inches long, of the size of a quill, of a gray or dark colour, lighter within, inodorous and of an extremely caustic, bitter and metallic taste. When broken, they present a number of small whitish crystals disposed in rosets or in a radical form.

C. P. This salt is formed of nitric acid 100 and silver 214.38, it is not deliquescent unless it contains a small portion of copper; it is soluble in its weight of water at 15° Centig. (59° Fahr.;) crystallizes in thin scales, white and semitransparent; light turns it black; it is fused at a moderately high temperature, and is decomposed at a red heat; its solution colours the skin, in a permanent manner, of a brown or deep violet colour.

Incomp. Subst. Fixed alkalies, hydro-chloric, sulphuric, and tartaric acids, soaps, arsenic, hydro-sulphates, vegetable astringent infusions, &c.

Prep. Treat the metallic silver with pure nitric acid; melt the salt, thus obtained, in a crucible over a slow fire, until all the water is evaporated. Then pour the fused nitrate into proper moulds slightly rubbed with tallow. The dark colour lapis infernalis sometimes acquires, is owing to a small quantity of oxide of silver, or of the metal rendered free by the decomposition of the unctuous substance used. The crystallized nitrate of silver is white.

Th. E. It is the best of the catheretics; therefore it is the one which is the most frequently used: this substance acts slowly upon the skin; but very quickly on granulations; the irritation it causes is of short duration; the eschar is thin, dry and grayish; finally, it is not absorbed. It is used to stop the growth of fungous flesh; to prevent strictures of the urethra by Ducamp's method, and those of the nasal passages, as has been recently proposed; to induce cicatrization in ulcers of the cornea, in old fistulous passages, in obstinate ulcers and indolent chancres; its powder applied on sores called hospital gangrene, stops its progress and a cure is obtained; dissolved in water, it is recommended as an astringent collyrium, in some cases of chronic ophthalmia. Finally, it has been recently used to cauterize the pustules of small pox in order to stop their progress; and according to Dr. Serres, to prevent the inflammations of the meninges of the brain, which so often render variola so complicated. This mode of treatment has received the appellation of the *ectrotic* method. Administered internally and in large doses, the nitrate of silver is a very active corrosive poison; in small doses it produces a heat in the epigastrium, colic, vertigo, and often, after a certain lapse of time, the colouring of the skin to blue or brown; it appears moreover to increase

the urinary secretion. It has been used in epilepsy, angina pectoris, and other nervous diseases. It is however a very dangerous medicine, and must be used with the greatest caution when exhibited internally.

D. & M. of Adm. *As a caustic*, any quantity.——*As a collyrium*, gr. j. to distilled water, ℥ij.——*Internally*. One-tenth to one-fifth of a grain, two or three times a day, increasing by degrees to twelve or fifteen grains.——*Pills of nitrate of silver*, Paris H. (Nitrate of silver gr. iij; gummous extract of opium, ʒss; musc, ℈j; camphor, ℈ij; for 48 pills.) Two or three pills a day.

Butter of Antimony. *Stibii deuto-murias sublimatus.* Chloride of Antimony. Muriate of Antimony. It is always the product of art.

P. P. Thick, unctuous, white; semitransparent, inodorous and of a very caustic taste.

C. P. Composed of antimony 100 and chlorine 80; exposed to the air it becomes yellow and attracts moisture; it melts below 100° Centig. (212 Fahr.;) and volatilizes a little above this temperature; and on cooling, crystallizes in tetrahedral prisms. Water decomposes and transforms it into an insoluble sub-hydro-chlorate of antimony called *Algarotti's powder.*

Prep. The heat is gradually applied to a glass retort, into which have been introduced three parts of pure metallic antimony and eight parts of perchloride of mercury. The butter of antimony sublimes and condenses in the neck of the retort.

Th. E. This caustic acts speedily and with energy; it produces dryer eschars and spreads less than potassa. It is employed principally to cauterize narrow and sinuous wounds, such as those resulting from the bite of rabid or venomous animals. The powder of Algarotti was formerly administered, internally, as an emetic; but this medicine, the action of which is very uncertain, is now no longer employed.

M. of Adm. It is applied by means of a camel hair pencil, or a dossil of lint. The blood must be first carefully removed, for this liquid rapidly decomposes the chloride of antimony.

White Oxide of Arsenic. *Arsenici oxidum album.* Arsenious acid. Deutoxide of arsenic. It is found in nature, but in small quantities, in different parts of Europe.

P. P. Vitreous masses, compact, brittle, transparent, without colour, or of a pale yellow, when they have not been exposed to the action of the air; but semitransparent and even opaque when they have been exposed to its action; inodorous, of an acid and corrosive taste, leaving on the tongue a sweetish taste, of the specific gravity of 3.73 when they are transparent, and only 3.69 when they are opaque.

C. P. This oxide is composed of arsenic 100, and oxygen

41.89. It is soluble in 13 of boiling and 80 of cold water; alcohol and oils dissolve also a small quantity of it; thrown upon burning coals, it volatilizes with a white and thick smoke of a garlic smell; heated with charcoal and a little potassa or soda, it decomposes, and the metallic arsenic is sublimed.

Prep. By roasting the ore of arsenical cobalt coarsely pulverized, this oxide volatilizes and condenses on the inside of the tube or chimney. A second sublimation purifies it.

Incomp. Subst. Lime water, hydro-sulphate of potassa, decoction of barks generally.

Th. E. Applied externally, it is a powerful caustic, used in the treatment of cancerous ulcers, and principally in those of the skin of the face; but its application requires the greatest caution, on account of the fatal accidents which might occur from its absorption. Internally, it is one of the most violent poisons. It produces the most excruciating colics, vomiting of blood, cold sweats, trepidation, &c. However, several English physicians, and among them Dr. Fowler, have administered it, in very small doses, in intermittent fevers, cancerous affections, some cutaneous affections, periodical head-aches, chronic rheumatism, &c.; but its use is attended with great danger. (See Begin's Therapeutics, the original, *not* the translation.)

D. & M. of Adm. *Externally. Rousselot's caustic paste, amended by Dubois,* P. (Oxide of arsenic 1; red sulphuret of mercury 16; dragon's blood 8;) as much as necessary to cover the ulcer. This powder is rendered moist with a little gum water, in order to form a paste.——*Internally.* One-sixteenth to one-eighth of a grain in pills, or dissolved in ℥j. of milk and water or a gummy solution.

Red Oxide of Mercury. *Hydrargyri rubrum oxidum.* Nitric oxide of mercury. *Hydrargyri nitrico oxidum.* Deutoxide of mercury. Red precipitate.

P. P. Masses formed of small shining scales of an orange red, producing a powder of a light yellow colour when it contains water, and of a yellow-red colour when it is anhydrous; inodorous, of a caustic and metallic taste.

C. P. It contains mercury 100 and oxygen 8 parts. It is slightly soluble in water, and this solution turns the syrup of violet to a green colour; at red heat, it decomposes and the mercury volatilizes.

Prep. It is obtained from the decomposition of the nitrate of mercury, or by heating some mercury in contact with air, in a vase with a very narrow neck, for a lapse of ten or fifteen days, at the temperature of ebullition.

Th. E. This substance has been exhibited internally by some very celebrated English practitioners* in syphilitic diseases. It is,

* [See Thomson's Dispensatory.]—Am. Eds.

however, very apt to occasion vomiting, purging, and otherwise to affect violently the stomach and bowels; consequently, it is now scarcely ever exhibited internally, or employed as an antisyphilitic. It is used, externally, as an escharotic and stimulant; to reduce fungous fleshy excrescences; to excite certain syphilitic ulcerations, and principally to reduce chronic ophthalmia, maintained by the ulceration of the free margin of the eyelids. It must be remembered that it is susceptible of being absorbed, and of producing very serious accidents.

D. & M. of Adm. *Internally*, L. In powder, one-eighth of a grain to one grain, combined with half a grain of opium, in the form of pill, night and morning.

Externally. Unguentum hydrargyri nitrico-oxidi, U. S., E. (Nitric oxide of mercury, one part; lard, 8 parts.)—L. (Red oxide of mercury, one part; white wax, two parts; lard, six parts.—D. (Ointment of white wax, ℔ss.; red oxide of mercury, ʒjss.)——*Regent's ophthalmic salve*, P. (Deutoxide of mercury, acetate of lead, and pulverized camphor āā. one part; washed fresh butter, eighteen parts.)——*Unguentum hydrargyri rubrum*, B. (Deutoxide of mercury, one part; axungia, thirty-two parts.)—Pr. (Deutoxide of mercury, one part; rose ointment, ten parts.——*Dr. Dupuytren's eye salve.* (Red oxide of mercury, gr. x.; sulphate of zinc, gr. xx.; axungia, ʒij.)

Sulphate of Copper. *Cupri Sulphas.* Deuto-sulphate of copper. Blue vitriol. Blue copperas. It exists in nature, dissolved in the waters of some mineral springs.

P. P. Four or eight-sided prismatic crystals, transparent, of a fine blue colour, slightly efflorescent, inodorous, of a styptic taste, and of a specific gravity of 2.19.

C. P. This salt is composed of sulphuric acid 32.14; oxide of copper 31.81; water 36.06; it is soluble in 4 of cold and 1 of boiling water. This solution reddens litmus; heated, it melts in its own water of crystallization, and becomes white; at a higher temperature it is decomposed.

Prep. Let the native or artificial sulphuret of copper be roasted slowly, and the product be exposed to the action of the moisture of the air, for a length of time; then lixiviate and evaporate the liquor, and reduce to the crystalline point.

Th. E. It is employed to cauterize certain fungous, fleshy excrescences, or applied to stimulate ill-conditioned ulcers, atonic venereal chancres and aphthæ, &c.; dissolved in water, it is useful as a styptic in external hæmorrhage, and, as stimulating in leucorrhœa, blennorrhœa, chronic ophthalmia kept up by the atony of the mucous membranes. Taken internally, it irritates powerfully the gastro-intestinal surface, causes colics, frequent vomiting, bloody alvine discharges, hiccoughs, convulsions, &c. It is administered in small doses as an emetic in cases of poisoning, and as a stimulant in some catarrhal affections, epilepsy, chorea, intermittent fevers, and in the first stage of certain kinds of

phthisis. This very dangerous medicine is now very much out of use.

D. & M. of Adm. *Internally.* As an emetic, gr. j. to iv. dissolved in water ʒiv. As a tonic and stimulant, gr. ¼ to ½ a day, and even more, but gradually, in solution or pill.

Externally. In substance—in lotion or injection, ℈j. to ʒj. dissolved in water, ℔j.——*Cupri sulphatis liquor*, U. S. (Sulphate of copper, gr. iij.; sulphuric acid, ♏. x.; distilled water, ℥ij.)——*Solutio sulphatis cupri composita*, E. (Sulphate of copper, alum, āā. three parts; sulphuric acid, 1.5; water, 32.)——*Lapis divina*, P.——*Cuprum aluminatum*, Pol. (Sulphate of copper, nitrate of potassa and alum, āā. 24; camphor, 1.) ʒj. to water ℔ij.

Verdigris. *Acetas cupri crudus.* Impure acetate of copper, *ærugo.*

P. P. A powder of a bluish-green colour, without odour, and of a strong styptic taste.

C. P. It is composed of neutral acetate of copper 43; hydrate of deutoxide of copper 37.5; water 15.5. Water dissolves the acetate of copper, and separates it from the oxide.

Prep. By permitting some plates of copper to remain for a length of time in contact with the residue or grounds of pressed grapes.

Th. E. Taken internally it is used to check the growth of fungous flesh; to destroy syphilitic excrescences; to cauterize certain atonic and carcinomatous ulcers, &c. Its action, externally, is like that of the sulphate of copper, but it is less violent; it has been proposed as an excitant in scrofulous and cancerous affections; but is now almost abandoned, in consequence of its serious and deleterious effects.

D. & M. of Adm. *Internally.* As an emetic gr. j. to ij. As a *stimulant*, gr. ¼ to ½. *Externally. Egpytiac ointment*, P.——*Linimentum æruginis*, L., D.——*Oxymel æruginis*, Den. (Honey, 14; acetic acid, 7; verdigris, 5 parts.)——*Ceratum æruginis*, Pr., Den. (Wax, 12; resin, 6; Venice turpentine, 4; verdigris, 1 part.)

Caustic Water of Ammonia. *Aqua ammoniæ caustica. Liquor ammoniæ causticus.* Caustic liquor of ammonia. Solution of ammoniacal gas in water.

P. P. Colourless liquid, transparent, of a very penetrating odour, *sui generis*, of a caustic taste, having a variable specific gravity according to the proportions of ammoniacal gas it contains; that of the pharmacopœiæ of the United States and Edinburgh is 0.939; that of Dublin College 0.934, that of London 0.960, and that of the French codex 0.903, and marks 22° of Baumé's areometer.

C. P. The ammoniacal gas is composed of nitrogen 1, and hydrogen 3, in volume; at the ordinary temperature water dis-

solves 430 times its volume; this solution contains ammoniacal gas 25.37, and water 74.63; it turns green the syrup of violets; slightly heated, the gas is all disengaged; and it forms salts with the acids.

PREP. Heat in a retort equal parts of lime recently slaked and of pulverized hydrochlorate of ammonia, and cause the disengaged gas to pass through water.

INCOMP. SUBST. Acids, metallic salts and alum.

TH. E. Applied on the skin, caustic water of ammonia produces immediately a lively pain, some redness, phlyctenæ, and even an eschar, whenever it is permitted to remain any time. It is commonly employed as a rubefacient in chronic rheumatisms, in recent engorgements of the mammæ, cold tumours, neuralgiæ, hooping cough, angina, &c. It is also employed (Dr. Gondret,) in order to disorganize the skin in a slow and painful manner in some affections, in which a strong revulsion is indicated; finally, it is also used to cauterize the bite of venomous animals, and the sting of venomous insects. Concentrated, and in large doses, it acts as a very violent irritating poison; diluted with water, as a very energetic stimulant and diaphoretic. It is administered with success in some peculiar cutaneous eruptions, difficult to cure or suddenly suppressed; in ataxic fevers, in chronic rheumatisms; finally, in syncope, the gas disengaged from this solution is inhaled in order to irritate the pituitary membrane.

D. & M. OF ADM. *Externally.* As a CAUSTIC, upon a piece of linen. As a RUBEFACIENT, *linimentum ammoniæ*, U. S., D. (Water of ammonia and olive oil āā. equal parts.)——*Linimentum ammoniæ fortius*, L.——*Sapo ammoniæ fortior*, B. (Liquor ammonia, 1; olive oil, 2 parts.)——*Oleum ammoniatum*, E. (Water of ammonia, 1; olive oil, 8 parts.)——*Linimentum ammoniatum*, P., F., POL. (Olive oil, 3; water of ammonia, 1.)——*Linimentum volatile*, A., R., DEN. (Water of ammonia, 1; sweet oil, 4.)——*Camphorated volatile liniment*, PARIS H. (Camphor and water of ammonia, āā. 1; olive oil, 16.)——*Linimentum ammoniæ et antimonii tartarizati*, U. S. (Liniment of ammonia, 8; tartarized antimony, 1.)——*Linimentum camphoræ compositum*, L. (Camphor, ℥ij.; solution of ammonia, f. ℥vj.; spirit of lavender, Oj.)——*Dr. Gondret's ammoniacal caustic*, (Caustic water of ammonia, 2; tallow and sweet oil, āā. 1.)——*Aqua ammoniæ diluta*, E. (Water of ammonia, 1 part; distilled water 2 parts.)

Internally. ♏. XX. to xl. in four ounces of liquid.——*Eau de Luce*, P.——*Spiritus ammoniæ succinatus*, L. (Water of ammonia, 16; tincture of Mecca balsam and oil of amber, āā. 1.)——*Alcohol ammoniatum*, U. S., E.——*Spiritus ammoniæ*, L., D.——*Tinctura ammoniata aromatica*, U. S. (Ammoniated alcohol, f.℥viij.; oil of rosemary, f.℥iss.; oil of sassafras, f.℥j.)——*Spiritus ammoniæ aromaticus*, L. (Cinnamon, cloves, āā. ℥ij.; lemon peel, ℥iv.; sub-carbonate of potassa, ℥viij.; muriate of ammonia, ℥v.; rectified spirit, Oiv.; water, Cj. mix and distil over six pints.)——*Alcohol ammoniatum aromaticum*, E. (Ammoniated alcohol, f.℥viij.; oil of rosemary, f.℥jss.; oil of lemon, f.℥j.) The dose is from f.℥ss. to j. in any convenient vehicle.——*Spiritus ammoniæ*, POL., F. (Strong water of ammonia, 1; alcohol, 3.) Same doses as the preceding.——*Liquor ammoniæ anisatus*, PR., POL. (Water of ammonia, 6; oil of aniseed, 1; alcohol, 24.) ♏. XX. to XXX.

The concentrated mineral acids, the deuto-chloride, the deuto-iodide and the pernitrate of mercury are also powerful caustics, and are used occasionally; but as these substances are endowed with other and more important properties, we shall describe them in their respective places hereafter.

[For this reason, we shall always find a great difficulty in establishing a classification which would be unobjectionable. The present, which we believe to be the least so, is however, not without objection; and therefore we may well be excused, if we do not succeed in arranging in their proper place, some of the articles we have added to this work, when to some of them, almost the whole catalogue of physiological effects on the organs, have been ascribed. When, however, the *physiological* practitioner shall have employed them, having in view to determine their proper effects on the human economy, then we shall be able to collocate them with more certainty in their respective places.]

CHAPTER III.

Epispastics and Rubefacients.

THE rubefacient substances are those which, applied to the skin, produce redness and the other symptoms of a slight inflammation. When this action is more energetic, or of a longer duration, rubefaction is attended with the secretion of a serous matter, which accumulates under the epidermis, detaches it, and induces the formation of vesicles or vesications, called *phlyctenæ;* phenomena very similar to those of a slight scald. Substances endowed with this action are called vesicating or epispastics, from (ἐπισπάω, I draw.) Thus these different names designate only the different degrees of a single physiological action.

Although the immediate action of the greatest part of these substances be merely local, they sometimes produce a general excitation more or less lively; but in this case, these effects are only sympathetic and do not proceed from the influence of the vesicating substance on the general system. However, some of them may be absorbed and occasion some general effects, independent of any sympathetic influence.

It is almost always in order to remove an irritation settled upon an important organ and to transfer it, as it were, on the external surface; in short, it is to produce a derivation, that we resort to the artificial inflammation of the skin, and that we keep up the purulent discharge which follows for a greater or shorter time.

In some cases, the stimulating properties of the vesicating substances are resorted to, in order to hinder the prostration of strength and other adynamic or asthenic symptoms.

Vesicating substances Derived from the Animal Kingdom.

Spanish Fly. *Cantharis vesicatoria*, Geoffroy. Meloe vesicatoria, Lin. Lytta vesicatoria, Fabricius. Insecta coleoptera, section of heteromeres, family of the trachelides. Very common in Spain, Italy, and France, where it is found in large families, on the fraxinus, lilac, viburnum, &c.

P. P. Cantharides have a body from six to ten lines long, the antennæ or feelers black, setaceous, composed of twelve articulations; the elytra long, flexible, of a shining golden green, and the tarses of a deep brown. Their odour is strong, penetrating, unpleasant and peculiar, and their taste extremely acrid;

their powder is of a brownish gray, intermixed with shining particles of a metallic green colour.

C. P. They contain, according to Robiquet, a peculiar substance, called *cantharidin*, a green oil, a black substance insoluble, and a green one soluble in water, some uric and acetic acids, phosphates of lime and of magnesia, and according to Orfila, a volatile oily principle, in which their odour seems to reside.

Cantharidin, the vesicating principle of these insects, is white, in small crystalline scales, insoluble in water and cold alcohol, soluble in ether, boiling oils and alcohol, from which it precipitates by cooling.

[Oil of turpentine* dissolves cantharidin without removing the black and yellow substances designated in the analysis of M. Robiquet as inert, and without being sensibly impregnated with the extremely nauseous volatile substance noticed by M. Orfila.

When cantharides have been subjected to oil of turpentine at 212° Fahr. separated by filtration while warm, and the oil of turpentine reduced by distillation in a water bath, alcohol having been added to the filtered oil of turpentine to facilitate its removal, granular crystals will deposit on the sides of the vessel containing the menstruum when it is cold and sufficiently reduced. These crystals are possessed of great activity, a quantity exceedingly small, not more than could be held on the point of a needle, when rubbed on the wrist, produced a blister of a diameter corresponding to the surface to which it was applied.

The vesicating properties could be extracted from cantharides by oil of turpentine, and probably a satisfactory ointment be prepared, by merely evaporating the oil of turpentine at a moderate temperature.]

Prep. The cantharides are killed by immersing them in tubs full of vinegar diluted with water, then dried carefully.

Th. E. Spanish flies are of all the vesicating substances, those which are most commonly used. Their action is principally confined to the skin; however, their active principles may be absorbed and cause serious accidents. Thus, the application of a blister is often followed by strangury, hæmaturia, priapism, &c. Taken internally, they act as the most energetic acrid poisons; but, besides the very lively irritation which they produce on the gastro-intestinal surface, they have, very evidently, a special action upon the genito-urinary organs, which they stimulate violently. Notwithstanding their extreme acrimony, they are administered in small doses, as very energetic stimulants in some cases of palsy of the bladder, and in the cure of incontinence of

* [This new process for obtaining cantharidin, has been furnished to us by Dr. E. Staples.]—Am. Eds.

urine, anaphrodisia or want of venereal passion, hydrophobia, and in certain cutaneous diseases; but experience does not seem to justify their employment in the latter diseases. However, it is a very dangerous medicine, the use of which requires the greatest caution and care on the part of the physician.

D. & M. of Adm. *Externally.* As an epispastic, any quantity in powder spread over the blistering plaster.——*Ceratrum cantharidum*, U. S. (Yellow wax, pine resin; olive oil, āā. 2 parts; cantharides in powder, 3 parts.)——*Emplastrum cantharides*, L. (Cantharides, ℔j.; wax plaster, ℔jss.; axungia, ℔j.)—E. (Mutton suet, wax, white resin, cantharides, āā. equal weights.)—D. (Yellow wax; mutton suet, āā. ℔j.; yellow resin, ʒiv.; cantharides, ℔j.)——*Blistering plaster*, P. (Cantharides, 125; white resin, 280; yellow wax, 180; Venice turpentine, 80.)——*Emplastrum cantharidum*, R. (Cantharides, Venice turpentine, āā. 32; wax, 96; camphor, 3.)—Pr., Den., Pol., F. (Cantharides, 2; turpentine and oil or axungia, āā. 1; wax, 4.)——*Emplastrum perpetuum*, Pr., Den., Pol. (Turpentine and resin, āā. 6; cantharides, 2; resin euphorbium, 1.)——*Emplastrum resinosum cantharidum*, U. S.——*Emplastrum calefaciens*, D. (Cerate of cantharides, 1 part; Burgundy pitch, 7 parts.)——*Issue paper*, P. (Cantharides, myrrh, euphorbium and mezereon bark, āā. equal parts.)——*Unguentum cantharidum*, U. S., L. (Cantharides, 2; distilled water, 8; resin cerate, 8.)——*Green epispastic ointment*, P. (Cantharides, 8; populeum ointment, 210; wax, 32; verdigris and extract of opium āā. 3.)——*Yellow epispastic ointment*, P. (Cantharides, 15; lard, 202; water and wax, 31; turmeric and essential oil of lemon, āā. 1.)——*Unguentum infusi cantharides*, E. (Cantharides, resin, yellow wax, āā. 1 part; Venice turpentine, hog's lard, āā. 2 parts; boiling water, 4 parts.)——*Ceratum cantharides*, L., Pr., Pol. (Spermaceti cerate, ʒvj.; cantharides, ʒj.)——*Oleum cantharidis*, P. (Cantharides, 1; olive oil, 8.)——*Camphorated liniment of cantharides*, P. (Tincture of cantharides, P., 8; oil of sweet almond, 64; almond soap, 16; camphor, 1.)

Internally. Pulvis cantharidis, gr.j. to iij. in pills.——*Tinctura cantharidum*, U. S., L. (Cantharides, ʒiij.; diluted alcohol, Oij.)—E. (Cantharides, ʒj.; proof spirit, Oj.)—D. (Cantharides, ʒij.; cochineal, ʒss.; proof spirit, Ojss.)—P., B. (Cantharides, 1; alcohol, 8.) This tincture contains 1-55th of soluble principles; it is administered in the dose of ♏. iv. to x. in an emulsion.—Pr., F., Pol. (Cantharides, 1; alcohol, 24.)—R. (Cantharides, 1; alcohol, 12.)—A. (Cantharides, 1; alcohol, 6.) The dose of these tinctures varies according to their strength.

[Potatoe Fly. *Litta vittata.* Besides this species of blistering fly, we have four others belonging to North America, viz. *Lytta aratra*, *L. marginata*, *L. cinerea*, and *Meloe niger.* The first, being the most common and powerful, we shall confine ourselves to give its description only. It is smaller than the Lytta vesicatoria, or common Spanish fly. Its head is of a light red colour, with black antennæ; the elytra, or wing cases, are black, with a pale yellow margin, and a stripe of the same colour extending along the middle of them; the mouth is armed with jaws furnished with five articulated tarsi. The abdomen of this fly contains a hard white substance about the size of a grain of wheat, which, when powdered, appears like meal, and when rubbed with water forms a milky emulsion.

Dr. J. Chapman, of Bucks county, was the first who publicly

noticed the vesicating properties of this species of lytta, as being equal, if not superior to the Spanish fly in its medicinal virtues. The experience of many other practitioners has proved that whether used as an external application, or exhibited internally, the potatoe fly produces the same results, and that its vesicant effect is even much more prompt. Neither age nor pulverization impair the properties of the Lytta vittata, when it has been carefully kept. Dr. Gorham of Boston states, that in an extensive series of experiments with this fly, he found it equal, if not superior, for external applications to the Meloe vesicatoria, and that he had exhibited the saturated tincture, internally, in many cases of diminished sensibility of the urinary organs, in gleets, and as a diuretic in dropsy, with the same successful results. In all cases they increased the discharge of urine, and produced a considerable irritation in the urethra, and at the neck of the bladder.

This insect appears on the potatoe plant or vines, about the end of July or the beginning of August. They inhabit the soil close to the plant; they ascend in the morning and afternoon, but generally avoid the heat of the sun at noon. This indigenous article, so abundantly and easily procured, cannot fail of being generally adopted as an excellent substitute for an expensive exotic not always to be obtained.

Mr. Say discovered, in one of the expeditions under Major Long, a new species of cantharides, which he named, after Mr. Nuttall, *Lytta Nutalli*, and which he ascertained to be very powerfully vesicating, and might be collected in considerable quantities.—*(Journal of the Philadelphia College of Pharmacy, Vol. I.)*

East India Fly. *Lytta gigas.* We are indebted to Dr. S. Jackson for an account of this insect, published in the Journal of the Philadelphia College of Pharmacy, Vol. I., No. II., first series. The colour is a deep azure or sea-blue; all parts of the insect, head, elytra or wing cases, body and legs, are of the same colour, with the exception of the under part of the chest, on which there is a brown spot. Its size is from three-fourths to an inch in length, being nearly twice the size of the Lytta vesicatoria, or cantharides. They have little or no odour.

This species of cantharides has been tried at the Philadelphia Alms-house. They proved to be exceedingly active as vesicatories, and never failed in their effect. They produce a vesication in general, much earlier than the Spanish fly, and from being found so much more active, one-half only the quantity is added in making the *emplastrum cantharidis.*]

Vesicating Vegetable Substances.

Family Thymelææ.

Mezereon. *Cortex gnidii*, Mezereon bark. *Daphne gnidium*, Lin. This shrub grows in the south of France, in dry and uncultivated places. P. U. The bark.

B. C. Leaves lanceolate, acute; flowers white, odorous; fruit, a globular berry, dry and blackish.

P. P. Thin, tenacious slips two or three feet long, gray exteriorly, yellow internally, covered with a silky down and whitish spots at small intervals, of a faint and nauseous odour, and of a very acrid taste.

C. P. Mezereon seems to be indebted for its vesicating properties to a peculiar substance called *Daphnin*, discovered by Vauquelin in the *Daphne alpina*. This substance is volatile, soluble in water; its taste scarcely perceptible at first, is by degrees developed and becomes very acrid. This bark contains besides, a lignous substance and several salts.

Th. E. It is used externally in order to produce issues, in cases where the too violent action of cantharides on the genito-urinary organs is to be apprehended. It has been exhibited internally, as a stimulant and diaphoretic, in herpetic affections, scrofula, constitutional syphilis, and chronic rheumatism.

D. & M. of Adm. *Internally.* Powder, gr. j. to x.——*Decoctum mezerei*, U. S., D. (Mezereon, ʒij.; liquorice root, ℥ss.; water, Oiij.)

Externally. As a blister, a piece macerated in vinegar, and applied to the skin.——*Mezereon ointment*, P. (Mezereon, 4; axungia, 10; wax, 1.)——*Unguentum mezerei*, Pol. (Mezereon, 18; axungia, 96; wax, 16; oil of lemon, 1.)

The *Daphne mezereum* and *D. laureola* are very often mixed with the *Daphne gnidium*, and sold for such. However, they possess nearly the same properties.

[Leather-wood. Moose-wood. *Dirca palustris*, Lin. A shrub, from five to eight feet high, native of this country, and growing near streams and in shady swamps. P. U. The bark.

B. C. Stem branching, spreading; flowers, peduncle bearing a fascicle of three yellow flowers; perigone tubular, border obsolate; stamina exserted, style filiform; fruit, berry one-seeded.

Th. E. The bark of this shrub is said to produce a blister as well as the other species of the family *Daphnideæ*.]

Family Cruciferæ.

Mustard Seed. *Sinapis nigræ semen. Sinapis nigra*, Lin. Annual plant, indigenous to Europe, growing in wet places, and cultivated on a large scale in several parts of Europe. P. U. The seeds.

B. C. Stem herbaceous, cylindric, two or three feet high: leaves lyrate, large, sessile, smooth: flowers yellow, small, disposed in spikes: calix spreading, petals straight: fruit, a slender tetragonal silique.

P. P. Mustard seed is spheroidal, externally of a brownish-red: internally of a lively yellow colour, of a sharp and slightly bitter taste; inodorous when not comminuted: it acquires a strong and very penetrating smell, when it is bruised in water; and gives rise to a peculiar volatile principle, which powerfully irritates the eyes.

C. P. According to Thibierge, it contains, 1st, a fixed oil of a greenish-yellow colour, soluble in alcohol; 2d, a volatile oil of a slight yellow, heavy, of an acrid and sharp taste, soluble in water, and containing sulphur; 3d, vegetable albumen; 4th, mucilage; 5th, sulphur; 6th, nitrogen; and 7th, calcareous salts. The active principle of mustard seems to reside in the volatile oil. The fixed oil contains, according to Garot and Henry, jr. a fat substance, analogous to cholesterine;* a red colouring matter, and a crystallizable acid, which they have called *sulpho-sinapic*.

Th. E. Mustard seed is daily used externally as a rubefacient, and even as a blister, when cantharides are improperly to be used, or when a more speedy action is desirable. Its employment internally, as a condiment, is too well known to deserve to be noticed here. It possesses powerful stimulating properties. It has been recommended, mixed with bark, in intermittent fevers, dropsy, and chlorosis. Taken internally, without being pulverized, it is said to have succeeded in dyspepsia, and in obstinate costiveness.

D. & M. of Adm. *Internally.* Mustard seeds, swallowed entire from ʒj. to ij. Bruised seeds, ʒij. to ʒss., boiled in milk Oj. and strained to separate the curd. *Externally. Cataplasma sinapis*, L. *Cataplasma sinapeos*, D. (Mustard seed, linseed or crumb of bread, äa equal parts: vinegar, a sufficient quantity.)——*Sinapisma*, Paris H. (Mustard seed pulverized, any quantity: vinegar, a sufficient quantity.)——*Pediluvium sinapis*, Paris H. (Meal of mustard seed, ʒiv. to viij.: hot water, a sufficient quantity.)——*Mustard enema*, from one to three tea-spoonfuls.

Euphorbium. *Gummi-resina Euphorbium*, a concrete juice of the *Euphorbia antiquorum, officinarum et canariensis*, Lin., which grow in Africa and in the Canary Islands, is endowed with

* [A name given by Pelletier to a substance found in great quantity in biliary calculi, and improperly called by Fourcroy adipocire. It is a combination of bile and adeps.]—Am. Eds.

an excessive acridity, and irritates violently the parts with which it comes in contact. It is in irregular drops, of the size of an English pea, yellowish, semitransparent, having commonly one or two holes, inodorous, at first without taste, but soon after producing a burning and corrosive taste. According to Pelletier, this substance is composed of sixty parts of a very acrid resin, insoluble in caustic alkalies; wax, fourteen; malate of lime, twelve; malate of potassa, one; bassorine, lignous substance, volatile oil, &c. ten. Thrown on burning coals, it consumes with an agreeable smell, water dissolves but one-seventh, alcohol one-fourth, and ether three-fifths.

The excessive violence of its action, and the dangers with which it may be attended, have caused physicians to abandon the internal use of Euphorbium, which was formerly exhibited as a drastic purgative in dropsy, in icterus, and several other diseases. It is now employed only externally as a rubefacient, and even as a catheretic. In the north of Europe, surgeons use it with success in caries of the bones and necrosis.

D. & M. of Adm. *Externally*, as catheretic.——*Tinctura Euphorbii*, Pr., R., Pol. (Euphorbium, 1; alcohol, 12.)

[Oil of Horse Mint. *Oleum monardæ punctatæ*, is a powerful rubefacient, producing heat, redness, pain, and even vesication when applied to the skin. Dr. Atlee, who first noticed it, states that he has used it with much advantage in chronic rheumatism, difficulty of hearing, periodical head-ache, paralytic affections, cholera infantum, and typhus. During the prevalence of an epidemic typhus in the city of Philadelphia, he used it, with much benefit, in the remarkable sinking state and coldness of the extremities to which the patients were subject. The arms, breast, and legs were bathed with a liniment made with two ounces of spirit of camphor, and half an ounce of oil of horse mint, and in a few minutes a comfortable glow succeeded. The experiments of many other practitioners have entitled this oil to be ranked among the most active rubefacients we possess.

The *Ranunculus bulbosus*, a plant common in our meadows, is also a powerful rubefacient, used in veterinary practice. Considering its great activity, Dr. Chapman thinks some beneficial application might be made of it.

The following plants are likewise used occasionally in Europe; but as they are only of a secondary order, and are never employed but in their green state, we think it useless to give a particular description of them:—

Clematis vitalba,
Ranunculus acris,
Anemone nemorosa,
Arum maculatum,
Chelidonium majus,
Plumbago Europæa,
Sedum acre,
Urtica urens, &c.]

CHAPTER IV.

Astringent Medicines.

ASTRINGENTS, (*astringere*, to contract, to bind,) are medicines which placed in contact with the living tissues, induce a kind of contraction of their fibres, at the same time that they exercise a tonic but transient action. It is in consequence of the former of these properties, that substances of this nature, applied on a bleeding wound, produce a contraction of the tissues, which stops hæmorrhage produced by the small vessels. When astringents are used externally for this purpose, they are called styptics.

The taste may generally indicate the substances endowed with the astringent property; the sensation of asperity which it leaves on the tongue is well known to, and experienced by everybody.

The vegetable and mineral kingdoms supply this kind of remedies. Those obtained from the former are commonly indebted for their activity to the presence of gallic acid and tannin which, until now, had been considered as a proximate principle; but Chevreul believes it to be composed of gallic acid, a colouring principle, and several other substances. These bodies, which are scarcely soluble in cold, but very much so in boiling water, decompose tartar emetic and the salts of iron, and form, with gelatin, an insoluble compound; they consequently, are never to be combined with these substances in pharmaceutical preparations. Gallic acid is very soluble in alcohol; but tannin does not always entirely dissolve in this liquid.

The mineral astringents are acids or salts with an excess of acid. Applied to the mucous membranes, or over the denuded surfaces, they cause a painful impression, followed by numbness, whilst the parts contract and even become white by the diminution of the calibre of the capillaries. But shortly after, the afflux of blood to the same parts increases gradually, and the vascular system seems to be more developed than before.

Whatever may be the nature of astringents, they all exercise a similar influence on the animal economy. They contract the tissues with which they come in contact, increase their tonic action and begin by producing on them a local excitation; but if their action is too protracted, they weaken the sensibility of the parts and have a tendency to augment their density.

If the action of these substances on the internal surfaces be too long continued, the secretion which occurs from this internal surface of the intestines is considerably diminished. They appear also to have a sympathetic influence on the cutaneous perspira-

tion, which they lessen, and the cause of this is, their acting sometimes as diuretics. Some medicaments which are commonly used as astringents, may, when given in large doses, act upon the general economy in the same manner as tonics do, (see chapter V.;) but they very often induce cardialgia, vomiting, and other unpleasant accidents. This prevents our exhibiting them in large doses.

From the preceding observations it must be evident to every one, that the astringent medication must be injurious in all cases, when an intense inflammation has taken place on an important organ; however, it is sometimes very successful in the beginning of an external inflammation, such as whitlow, burns, erysipelas produced by insolation; but it is principally when the phlegmasia has become chronic, when there is no longer any pain, and when the secretions have not yet reassumed their normal state, as in certain chronic diarrhœæ and in the last period of catarrhal inflammations of the vagina or urethra, that astringents, properly exhibited, are most useful. They are likewise employed with success in colica pictonum; but in this case they must be administered in large doses.

The efficacy of these remedies has been highly recommended in passive hæmorrhage, such as menorrhagia, hæmaturia and others: and generally they are pretty successful; but in hæmoptysis, hæmatemesis and other similar affections, it will be prudent to abstain from using them, as these maladies are very often produced by organic wounds, which might be aggravated by any considerable excitation. Should it however, be thought necessary to exhibit them in some instances, it will be proper to begin with those which are the least irritating; while in the first mentioned affections the most energetic may be used at once from the beginning, without hesitation.

Mineral Astringent Substances.

Sulphuric Acid. *Acidum sulphuricum.* Oil of vitriol—vitriolic acid. It exists in nature in great abundance, combined with certain salifiable bases, such as lime, alumen, soda, &c. and sometimes free and simply united to other substances, in the waters of some rivers and several caves near volcanoes.

P. P. This acid, such as is found in the shops, is liquid, colourless or brownish, of an oily consistence, inodorous, of a very acid taste, having a specific gravity of 1.842, and indicating 66° of Baumé's areometer. In this state, it contains always some water, from which it is separated with much difficulty; it has however been obtained anhydrous, and in this state, it is solid, white, opaque, melts at 25° Centig. (77° Fahr.) and crystallizes, on cooling, in silky tufts.

C. P. Anhydrous or pure sulphuric acid is composed of sul-

phur 100, and oxygen 149.16; that of the shops contains in 100 parts, water 19, pure acid 81, and some small portions of sulphates of lead, of copper and alumen, &c. It reddens litmus very deeply, readily converts into charcoal, and reduces to a black jelly animal and vegetable substances. Exposed to the air, it attracts its moisture, turns black, increases in *absolute* weight, whilst its specific gravity diminishes. It boils and volatilizes at about 25° Centig. (77° Fahr.;) heated with charcoal, it is decomposed into oxygen and sulphurous acid; it congeals at — 10° Centig. (+ 14° Fahr.) and crystallizes in hexaedral prisms; mixed with water, it produces at the time of the mixture, a considerable disengagement of caloric; finally, it possesses a great affinity for salifiable bases and principally for baryta.

Incomp. Subst. All the carbonates, nitrates, hydro-chlorates, hydro-sulphates, &c.

Prep. Burn in a leaden chamber a mixture of eight parts of sulphur with one of nitre. The sulphur is converted into sulphurous acid by means of the oxygen of the air and that of the nitric acid, which is transformed into nitrous acid. These two acids combine together and form a solid compound, decomposed by water and changed into sulphuric acid which is dissolved, and into nitrous gas, which is disengaged from it.

Th. E. Concentrated sulphuric acid, is a very energetic caustic, and consequently a very violent poison; diluted with water it acts externally, as a powerful astringent; taken internally, it increases the tone of the organs, stimulates the stomach, promotes the urinary secretion, whilst it diminishes the heat, quenches the thirst, and lessens the activity of circulation. This action renders it very similar to cooling medicines, without however, permitting us to separate it from the class of astringents. If used for too long a time, it produces cardialgia, emaciation, and a very sensible alteration in the digestive functions.

It is administered with great success, in the form of lemonade, in bilious and typhoid fevers, in scurvy, chronic diarrhœa, dysenteries of long standing, and passive hæmorrhage.

D. & M. of Adm. *Internally.* ♏ xij. to xxx. in sugar and water.——*Acidum sulphuricum dilutum*, U. S., L., D., Den., R., F. (Sulphuric acid, 1 part; water, 7 parts.)——*Tinctura acidi sulphurici*, U. S. (Sulphuric acid, f. ℥iij.; alcohol, Oij.; ginger root and cinnamon, āā. ℥j.)——*Acidum sulphuricum aromaticum*, E. (Alcohol, ℔ij.; sulphuric acid, ℥vj.; cinnamon and ginger root, āā. ℥j.)——*Acidum sulphuricum alcoholisatum. Eau de Rabel*, P. *Mistura sulphurica acida*, Pol. (Sulphuric acid, 1 part; alcohol, 3 parts.)——*Liquor acidus Halleri*, A. (Alcohol and sulphuric acid, āā. equal parts.)——*Tinctura aromatica cum acido sulphurico, Mynsicht's vitriolic elixir*, P. (Sulphuric acid, 13; aromatic ingredients, 20; sugar, 8; alcohol, 100.) ♏. xv. to xxx.——*Tinctura aromatica sulphurica*, Pr. (Aromatic tincture, 12; sulphuric acid, 1.) Same doses.——*Mistura vulneraria acida*, Pr., Pol. (Sulphuric acid, 1; vinegar, 6; alcohol, 3; honey, 2.)——*Infusum rosæ comp.* U. S., L., D. (Dried roses, ℥ss.; boiling water, Oijss.;

diluted sulphuric acid, f.ʒiij.; sugar, ʒjss.)—E. (Red rose, ʒj.; boiling water, ℔ijss.; diluted sulphuric acid, ʒss.; refined sugar, ʒj.)——As a *gargle.* Pure sulphuric acid, gut. xv. to xx. in water, ʒviij.——*Detersive gargle,* Paris H. (Barley water, ʒvj; honey of roses, ʒij; sulphuric acid, gut. xx.)

Externally. Concentrated sulphuric acid as an escharotic to destroy warts.—— *Diluted,* as astringent, and as excitant of the skin, in psora and some other chronic affections of this tissue.

Alum. *Alumen.* Super-sulphate of alumina and potassa, or of ammonia. It is found in small quantities in the neighbourhood of volcanoes.

P. P. Regular octahedral crystals, colourless, transparent, inodorous, of a sweetish, but very styptic taste, and of a specific gravity of 1.719.

C. P. Alum having for base potassa, is composed of sulphuric acid, 33.77; alumina, 10.82; potassa, 9.94; water, 45.47. It is slightly efflorescent; soluble in fifteen parts of cold water, and in a little less than its weight of boiling water; this solution reddens the tincture of litmus. Heated, it melts in its water of crystallization, and constitutes in this state *rock alum;* at a higher temperature, it swells up, becomes opaque and dry, and then is called *Calcined alum, Alumen ustum;* it decomposes at a red heat.

Prep. It is obtained by exposing the schistose clays, containing sulphuret of iron, to the action of the air and water for a year or more, and roasting the compound it forms; then by lixiviating the whole, and crystallizing the liquor. The potassa is furnished by the ashes of the wood employed in the process of roasting; but as there is not a sufficient quantity of them, and as the liquor contains yet, even after the first crystallization, a good deal of super-sulphate of alumina, more potassa is added to it, and a second crop of crystals is obtained. Alum is freed from the small quantity of sulphate of iron that it contains at first, by repeated crystallizations.

Incomp. Subst. Alkalies and their carbonates, lime, magnesia, ammonia, mercurial salts, acetate of lead, infusion of bark, nut-galls, and many other vegetable and animal substances.

Th. E. Alum is an energetic astringent; it often produces a painful sensation of the stomach, and, in large doses, causes colics, nausea, and vomiting. It is administered with success in the hæmorrhage of the uterus, and other hæmorrhages which are not attended with inflammation; in atonic discharges, such as blennorrhœa, leucorrhœa, certain serious diarrhœæ, and, in the *Hospital Saint Antoine,* it is exhibited in saturnine colic. Externally, it is employed in order to reduce certain chronic inflammations of the conjunctiva, of the fauces and of the skin, some superficial ulcerations, such as aphthæ, prolapsus of the rectum, fluor albus, and finally, external hæmorrhages. Dr. Pommier, and after him,

Dr. Bretonneau, have used it with success in cases of croup or in inflammatory angina maligna, (diphtherite of Bretonneau,) it is blown into the posterior parts of the mouth.

Calcined alum is very much employed externally, as an escharotic, to stop the growth of fungous excrescences.

D. & M. of Adm. *Internally.* Gr. vj. to ʒj., in solution or pills.——*Pulvis aluminis compositus,* E. (Sulphate of alum, 4 parts; kino, 1 part.) Dose, from gr. x. to xv.——*Mistura aluminis,* Paris H. (Alum, ʒjss.; syrup, ʒj.; rose water, ʒiv.) Dose, a table spoonful.——*Serum lactis aluminosum,* B. (Alum, ʒij.; milk, ℔j.) Dose, from ʒiv. to ʒij., several times a day.——*Astringent pills,* Paris H. (Alum, gr. vj.; extract of opium, gr. j.; catechu, ϑj.; for six pills.

Externally. As gargle, injection, lotion, and collyrium, ʒss. to ʒij. dissolved in water, ℔j.——*Liquor aluminis compositus,* L. (Alum and sulphate of zinc, āā. ʒss.; boiling water, Oij.)——*Astringent gargle,* Paris H. (Decoction of barley and of red roses, āā. ʒiij.; alum, ʒj.; honey of roses, ʒij.)——*Collyrium of alum,* Paris H. (Rose water, common water, āā. ʒij.; alum, ϑj.)

Sulphate of Iron. *Ferri sulphas,* proto-sulphate of iron. Green vitriol, green copperas. It is found only in small quantities in its natural state.

P. P. Rhomboidal crystals, transparent, of a fine green colour, inodorous, of a styptic taste, similar to that of ink, and of a specific gravity of 1.880.

C. P. This salt is composed of sulphuric acid, 29.01; protoxide of iron, 25.43; water, 45.56. By exposure to the air, a yellowish pulverulent crust is produced on the surface, (sub-sulphate of peroxide.) It dissolves in two parts of cold, and in three-quarters of its weight of boiling water. This solution, by the action of the air, becomes turbid, and is converted from a green to a reddish-yellow colour; it experiences the aqueous fusion at a moderate temperature, swells and whitens; it is decomposed at a higher temperature, and leaves a residue of red oxide of iron.

Prep. The sulphate of iron used in pharmacy, is obtained by causing some sulphuric acid, at 20°, to act upon metallic iron. The process for procuring this substance on a large scale, does not permit us to get it sufficiently pure.

Incomp. Subst. All the salts, the base of which forms with sulphuric acid, an insoluble compound; the metallic oxides of the two first classes; borax; nitre; muriate of ammonia; the tartrate of potassa and soda; the acetate of lead; soaps, &c. Tannin and the other vegetable astringent principles, are substances generally considered as not to be administered with this salt; but several modern authors are inclined to think that the precipitates formed by them are endowed with the same medicinal properties as the sulphate of iron.

Th. E. It is a very energetic astringent, and ought therefore, when employed internally, to be exhibited with the greatest caution; in fact, given in large doses, it may produce vomiting,

violent colics, and other symptoms of a gastro-intestinal irritation; it is recommended in passive hæmorrhages, principally in such as are of a scorbutic nature, in diabetes and other atonic affections. According to Dr. Marc, it is very useful in the treatment of intermittent fevers; finally, it has been discovered that it possessed some anthelmintic properties. Externally, it is employed in hæmorrhages, in chronic mucous discharges, in inveterate and bleeding ulcers.

D. & M. of Adm. *Internally. Pilulæ ferri sulphatis*, U. S. (Sulphate of iron, ʒj.; extract of gentian, a sufficient quantity;) for 30 pills.——*Pilulæ ferri sulphatis compositæ*, U. S. (Rhubarb, ʒjss.; sulphate of iron, ℈ij.; Castile soap, ʒss.;) for 40 pills.—L. (Myrrh, ʒij.; sub-carbonate of soda, sulphate of iron, sugar, āā. ʒj.;) dose from gr. x. to ℈j., two or three times a day.——*Pilulæ tonico-nervinæ*, Den. (Sulphate of iron, assafœtida, and extract of chamomile, āā. equal parts;) same doses.——*Mistura ferri comp.* (*Dr. Griffith's antihectic mixture,*) U. S. (Myrrh, ʒj.; sub-carbonate of potassa, gr. xxv.; rose water, Oss.; sulphate of iron, ℈j.; spirit of lavender, f.ʒss.; sugar, ʒj.)—L. Same proportions, except in that of rose water, which in the London preparation, is f.ʒviiss.; another difference is the spirit of nutmeg in lieu of spirit of lavender.——*Dr. Marc's mineral water.* (Sulphate of iron, ʒj.; water ℔ij.;) one glass in the apyrexia.

Externally, an aqueous solution used in lotions or injections.——*Emplastrum roborans*, B. (Litharge plaster, 24; resin, 6; wax and olive oil, āā. 3; sulphate of iron, 8.)

Oxide of Zinc. *Zinci oxidum.* Protoxide of zinc. Flowers of zinc. Pompholix. Prepared tutty. It is found in nature in large quantities, mixed with foreign substances.

P. P. White flakes, light, soft to the touch, inodorous, tasteless.

C. P. This oxide contains zinc 100, and oxygen 24.77. It is not altered by the air; it is insoluble in water and alcohol; completely soluble in caustic alkalies and in acids, with which it combines.

Prep. Heat, in an open crucible, some metallic zinc, to about 370° Centig. (700° Fahr.) the zinc burns with a bright flame, and is converted into white flakes.

Th. E. This tonic and astringent substance, given in large doses, causes nausea, colics, vomiting, and even vertigoes, and a sort of momentary inebriation. It has been highly commended in epilepsy, chorea, hysteria, and other neuroses. It is useful in atonic discharges of mucus. Externally, it has proved advantageous in chronic ophthalmia, obstinate leucorrhœa, chapped nipples, and albugo.

D. & M. of Adm. *Internally.* Gr. vj. to ʒss. in pills.——*Dr. Méglin's pills*, Paris H. (Oxide of zinc, extracts of valerian, of fumitory, of hyosciamus, āā. ʒj.; for 36 pills.) Dose from 2 to 4, several times a day.

Externally. Unguentum zinci oxidi impuri, U. S. (Axungia, 5 parts; oxide of zinc, 1 part.)——*Unguentum zinci*, L., E., F., Den. (Oxide of zinc, 1; simple liniment, cerate or axungia, 6.)—Pr., B. (Oxide of zinc, 1; cerate, 8.)—D. (Ointment of white wax, 32 parts; oxide of zinc, 3 parts.)——*Dr. Dupuytren's dry collyrium.* (Sugar, ʒij.; red oxide of mercury, gr. x.; oxide of zinc, gr. xx.)

Sulphate of Zinc. *Zinci sulphas.* White vitriol. White copperas. It is found in water, but in an impure state, and in small quantities.

P. P. Four-sided prismatic crystals, white, inodorous, of an acrid taste, styptic, and acidulous; of a specific gravity of 1.912.

C. P. It is composed of sulphuric acid, 31.99; oxide of zinc, 32.12; water, 35.89; slightly efflorescent; soluble in two-fifths of cold, and in a little less than its weight of boiling water. Heated, it melts in its water of crystallization, and is decomposed at a high temperature.

Prep. Let some diluted sulphuric acid act upon granulated metallic zinc; filter the solution and let it crystallize.

Incomp. Subst. Alkalies, hydro-sulphates, milk, and vegetable astringent infusions.

Th. E. Taken in considerable doses, this salt acts like irritant poisons, and causes almost instantaneous vomiting; in small doses, it is astringent and tonic. It is used as an emetic in some cases of poisoning, in order to evacuate the stomach quickly, but its action is very uncertain, and cannot be relied upon. As a tonic and an astringent, it succeeds in leucorrhœa, chronic catarrhal affections, and in certain cases of dyspepsia. It has been likewise recommended in epilepsy, hooping-cough, &c. *Externally*, it is employed in lotions and injections, in ophthalmia, chronic blennorrhœæ, scrofulous ulcerations, and in some superficial inflammations and ulcerations.

D. & M. of Adm. *Internally.* As an emetic, gr. x. to xx. As an astringent, from gr. ij. to vj. twice or thrice a day.——*Dr. Paris's astringent pills.* (Sulphate of zinc, gr. x.; myrrh, ʒss.; conserve of roses, a sufficient quantity for 20 pills.) Dose, two a day.

Externally. Collyrium, from one to two grains to an ounce of liquid.——*Injections* and *lotions* from ℈j. to ʒj. to water ℔j.——*Collyrium of sulphate of zinc*, P. (Sulphate of zinc, 1; rose water, 250; alcohol, 8.)——*Astringent collyrium*, Paris H. (Sulphate of zinc, gr. xv.; rose water, ʒiv.)

Protoxide of Lead. *Plumbi oxidum fusum, seu Semivitreum Lithargyrum.* Semivitrified oxide of lead. Litharge. Not found in nature.

P. P. Crystalline scales, shining, opaque, yellow or reddish, without odour or smell.

C. P. This oxide is composed of lead, 100; oxygen, 7.7. Heated in contact with the air, it passes to the state of deutoxide; it attracts the carbonic acid of the air, and is transformed, after a length of time, into a sub-carbonate. It is slightly soluble in water, very much so in alkalies and acids, with which it forms salts.

Prep. Heat the metallic lead, exposed to the contact of the air, then let the protoxide, thus produced, cool slowly.

Th. E. It is only employed *externally*, under the form of plaster or ointment, as desiccative and maturative.

M. of Adm. *Emplastrum plumbi*, U. S., E. (Semivitrified oxide of lead, 1 part; olive oil, 2 parts; water, a sufficient quantity.—L. (Semivitreous oxide of lead, ℔v.; olive oil, Cj.; water, Oij.)—D. (Litharge, ℔v.; olive oil, ℔ix.; water, Oij.)——*Diapalme* or simple plaster, P. (Litharge, axungia, olive oil, equal parts of each.——*Onguent de la mère*, burnt plaster, P.——*Ceratum fuscum*, A. (Litharge, axungia, butter and mutton suet, āā. 25 parts; yellow wax, 18; black pitch, 8.)

This oxide enters also into the composition of many other plasters, which are now obsolete.

Deutoxide of Lead. *Plumbi oxidum rubrum, seu Minium.* Red oxide of lead; red lead. It is always the product of art.

P. P. Powder of a very bright orange-red colour, insipid, inodorous, and of a specific gravity of 8.94.

C. P. It is composed of lead, 100, and oxygen, 11.08. Heated, it melts and passes to the state of protoxide. It is insoluble in water, and combines with acids after losing some of its oxygen and being reduced to the condition of litharge.

Prep. By calcining some protoxide of lead in open vessels.

Th. E. It is used to fulfil nearly the same indications as the preceding article. It is only employed externally under the form of a plaster.

M. of Adm. *Nuremberg plaster*, P. (Red oxide of lead, 90; olive oil and yellow wax, āā. 125; camphor, 6.)——*Minium troches*, P. (Red lead, 1; corrosive sublim. 2; crumb of bread, 8; rose water, q. s.) as escharotic.

Neutral Acetate of Lead. *Plumbi acetas crystallisatus.* Salt or sugar of lead. It does not exist in nature.

P. P. Irregular masses, white, somewhat resembling sugar, formed by the aggregation of small crystalline and four-sided prismatic needles, of a sweet, and soon after astringent taste, and of a specific gravity of 2.35.

C. P. This salt, composed of acetic acid, 26.99; oxide of lead, 58.71; water, 14.30; is a little efflorescent, and very soluble in water and alcohol. The watery solution is acid, limpid, when it is made with distilled water, but it is turbid and white when pump or river water has been used. Heated in the air, is decomposed, and disengages vapours of acetic acid.

Incomp. Subst. Alkalies and their carbonates; almost all acids and the neutral salts; lime, magnesia, hydro-sulphates, soaps, astringent vegetable infusions, and the greatest part of animal substances.

Prep. Boil some litharge in acetic acid.

Th. E. This salt, taken in large doses, acts like the irritant poisons; it produces sometimes the disease called lead colic; but it is seldom attended with accidents, and simply exerts a very energetic astringent action. It is employed internally with success, in colliquative diarrhœa, maintained by superficial ulcera-

tions of the mucous membrane of the intestines, in pulmonary, uterine,* and intestinal hæmorrhages; in chronic catarrhs, and principally in *colliquative* or profuse perspirations of persons affected with phthisis. It is frequently used externally as an astringent, and in ophthalmiæ whenever we desire to produce a resolution, in superficial inflammations of the skin, burns, contusions, &c.

D. & M. of Adm. *Internally.* From half a grain to 2 grains, and more gradually, in pills, or dissolved in distilled water. Astringent pills, Dr. Paris, (Acetate of lead, gr. iij.; opium, gr. j.; extract of cicuta, gr. x. for four pills.) 2 a day.——*Acetate of lead pills*, Paris H. (Acetate of lead, althæa root, āā. ℈j.; simple syrup, a sufficient quantity for 12 pills.) From 4 to 8 a day.

Externally. Lotions, injections, collyria, from ʒij. to ʒij. to water, ℔j.——*Aqua saturnina*, R., Den., F. (Acetate of lead, 1 part; distilled water, 24 parts; alcohol, 2 parts.)——*Ceratum plumbi acetatis*, L.——*Ceratum saturni*, Den. (Acetate of lead, 1; white wax, 8; olive oil, 32.)——*Resolvent collyrium*, Paris H. (Infusion of elder flowers, ʒiv.; acetate of lead, gr. vj.; alcohol, ʒij.)

[Plumbi Sub-acetas Liquidus, U. S. *Liquor plumbi sub-acetatis*, L. Liquid sub-acetate of lead, extract of lead, Goulard's extract. It is prepared by boiling semivitrified oxide of lead, ℔ij. in acetic acid, (distilled vinegar,) Cj. down to six pints, assiduously stirring the mass; or by the French process, which consists in boiling one part of pulverized litharge, with a solution of three parts of acetate of lead in nine parts of distilled water, and by concentrating the liquor to 30° of Baumé's areometer. This last preparation is more uniform than the former. The liquid sub-acetate of lead turns green the syrup of violet, and forms a copious white precipitate with carbonic acid, or common water. It is only employed externally as an astringent, and also whenever resolution is desirable in erysipelatous inflammations, produced by external causes, in burns, contusions, sprains, &c.]

M. of Adm. *Liquor plumbi sub-acetatis dilutus*, L. (Extract of lead, f.ʒj.; distilled water, Oj.; proof spirit, f.ʒj.)——*Liquor sub-acetatis lithargyri compositus*, D. (Extract of lead, proof spirit, āā. f.ʒij.; distilled water, Oj.)——*Eau vegeto-minerale*, P. (Sub-acetate of lead, 1; distilled water, 64; alcohol, 4.)——*Resolvent collyrium*, Paris H. (Infusion of elder flowers, ℔j.; sub-acetate of lead, ʒj.)——*Astringent gargle*, Paris H. (Sub-acetate of lead, ʒss.; barley water, ℔j.; syrup, ℥j.)——*Ceratum plumbi compositum*, E. (Extract of lead, f.ʒijss.; yellow wax, ʒiv.; olive oil, f.ʒix.; camphor, ʒss.——*Opiated resolutive liniment*, Paris H. (Sweet oil, ʒij.; laudanum, ʒij.; sub-acetate of lead, ʒj.)

Sub-carbonate of Lead. *Plumbi sub-carbonas.* Cerusa. White lead. It is found in nature in small quantities.

P. P. In very white conic pieces, or in hard scales, of a grayish-white, insipid, inodorous, and of a specific gravity of 6.07.

* [Dr. William P. Dewees is a very great advocate for the use of acetate of lead in every case of uterine hæmorrhage; but after a proper depletion, &c. See his Treatise on the Diseases of Females.]—Am. Eds.

C. P. This salt is composed of carbonic acid 100, oxide of lead 504.33; it is insoluble in water, unless it contains carbonic acid, soluble in potassa and reducible by heat.

Prep. Cause a current of carbonic acid gas to pass through a certain quantity of liquid sub-acetate of lead.

Th. E. This substance, which is very much employed in the arts, is that which produces commonly the disease known by the name of *painters' colic.* As a remedy, it is used only externally in a few cases. It is astringent and desiccative.

M. of Adm. *Unguentum plumbi sub-carbonatis,* U. S., D. (Cerusa, or sub-carbonate of lead, ℥ij.; simple ointment, ℔ j.)——*Unguentum carbonatis plumbi,* E.——*Rhases' white ointment,* P. (Cerusa, 1; axungia or simple ointment, 5.)——*Unguentum cerusæ,* Pr., Pol., B. (Axungia and cerusa, āā. 2.; suet, 1.)——*Emplastrum plumbi subcarbonatis compositum,* U. S. (Sub-carbonate of lead, ℔j.; olive oil, 2 pint; yellow wax, ℥iv.; lead plaster, ℔ jss.; orris root, ℥ix.; water, a sufficient quantity.)——*Emplastrum cerusæ,* Pr., Pol. (Cerusa, 9 parts; axungia, 6 parts.)

Borax. *Sodæ sub-boras.* Sub-borate of soda. It is found in large quantities in several lakes of Thibet and China, and in some of the mines of Peru.

P. P. Irregular crystals, hexaedral, white, semitransparent, of a styptic and urinous taste and of a specific gravity of 1.72.

C. P. According to Mr. Soubeiran, borax is composed of boric or boracic acid, 34.98; soda, 16.77, water, 48.25. It is slightly efflorescent, soluble in 8 parts of cold, and 2 of boiling water. This solution turns green the syrup of violets. Heated, it melts in its water of crystallization, and a red heat transforms it into a transparent glass.

Prep. The borax of commerce is purified by melting it over the fire, then dissolving it while in powder and permitting the liquor to crystillize.

Incomp. Subst. Acids generally, potassa, the sulphates and muriate of lime and magnesia, &c.

Th. E. It is used only externally as astringent and detersive in aphthæ, excessive salivations attended with ulcerations of the tongue and of the internal surface of the cheeks.

D. & M. of Adm. Gargles, ʒss. to ij. to ℔j. of liquid.——*Detersive gargle,* Paris H. (Decoct. of barley, ℔jss.; syrup of gum arabic, ℥j.; borax, ʒij.)——*Astringent gargle.* (Borax, ʒij.; rose water, ℥viij.; honey of roses, ʒi.)——*Mel boracis,* L. (Borax, 1; honey, 8.)

Lime. *Calx.* Protoxide of calcium. It is never found in nature but in combination with acids, and particularly with the carbonic acid.

P. P. Irregular masses, of a grayish white, when the lime is anhydrous, *quick lime;* powder or fragments very friable and pulverulent, very white when in the state of a hydrate, *slaked lime;* of an acrid and caustic taste and of a specific gravity of 2.3.

C. P. Lime is formed of calcium 100, and oxygen 39. Exposed to the air, it attracts from it the moisture and the carbonic acid falls into a powder and passes to the state of sub-carbonate. When water is poured on lime it rapidly combines with it, and is transformed into a hydrate; this action is attended with an elevation of temperature, with a considerable disengagement of aqueous vapours, and with a remarkable hissing. It is dissolved in about 400 parts of water, and turns green the syrup of violets.

Incomp. Subst. Acids, carbonates, the infusions of barks, rhubarb, colombo, &c.

Prep. The carbonate of lime is calcined in large furnaces or kilns.

Th. E. This caustic substance, introduced into the stomach, acts like the irritating poisons. Dissolved in water and exhibited in small doses it is endowed with powerful astringent and antacid properties. It is administered in diarrhœa, chronic leucorrhœa, some cases of dyspepsia, diabetes, and in verminous affections. It is employed as a lithontriptic in calculous affections of the bladder, and it is said, that great advantage has been derived from its exhibition. Externally it is used in lotions and in injections in order to abate atonic and cancerous ulcers, certain diseases of the skin, itch, tinea capitis, and atonic mucous discharges.

D. & M. of Adm. *Lime water*, P.——*Liquor seu aqua calcis*, U. S., L., E., D., Pr., R., Dan., Pol., B. (Distilled water saturated with lime.) ʒj. to viij. in ℔ j. of milk or mucilaginous drink.

Externally. Calcareous soap, P. (Lime water and oil of sweet almonds, āā. 125; Sydenham's laudanum, 4.)——*Linimentum aquæ calcis*, U. S., E., D. (Lime water, olive or flaxsed oil, āā. equal parts.)——*Resolvent liniment*, Paris H. (Sweet oil, ʒij.; camphor, ʒij.; lime water, ʒss.)——*Swediaur's alcoholic lotion.* (Lime water, 2 parts; alcohol, 1 part.)

Vegetable Astringent Substances.

Family Leguminosæ.

Catechu. *Catechu. Terra japonica.* Extract prepared from the wood, and the green fruits of the *Mimosa catechu*, Lin., and of several other trees of the same family, which grow in the East Indies, principally in Bengal.

B. C. Leaves large, bipinnate, composed of 12 pairs of pinnate leaves, which are themselves formed of a great number of lanceolate and acute leaflets, two thorns slightly curved. Flowers in cylindrical spikes, from two to three in the axillæ of the leaves; fruits, plane, and elongated pods, containing five or six seeds.

P. P. There are three sorts of catechus. The first, *Bombay catechu*, is in square pieces, of a reddish-brown, friable, of a uniform texture, fracture uneven, of a specific gravity of about

1.39. The second, *Bengal catechu*, is in round pieces, of the weight of three or four ounces, of a deep chocolate colour internally, and resembling iron rust externally; more friable, of the specific gravity of 1.28. Finally, the third kind, *catechu in masses*, which is in irregular pieces of two or three ounces, of a reddish-brown, shining, homogeneous, and wrapped up in large-nerved leaves. These three kinds of catechu are inodorous, of an astringent taste at first, but soon after sweet and agreeable, at least with the first and last sort.

C. P. The catechu of Bombay is composed, in 200 parts, of—tannin, 109; extractive matter, 68; mucilage, 13; insoluble matters, lime, and impurities, 10. That of Bengal contains only 97 of tannin. Finally, the composition of the third is very analogous to that of the Bombay catechu. These three kinds are almost entirely soluble in water and alcohol.

Incomp. Subst. Alkalies, metallic salts, principally those of iron and gelatin.

Th. E. It is one of the best astringents to be found in the materia medica, and is likewise one of the most in use. In small doses, frequently repeated, it acts as a slight tonic. It is administered with much success in diarrhœa, chronic mucous discharges, passive hæmorrhage of the uterus, of the intestines, &c. It is exhibited likewise in the form of lotions and gargles, in order to remedy the relaxation of the gums, aphthous ulcerations of the mouth in scorbutic subjects, and finally to correct the fœtid breath.

D. & M. of Adm. In powder, gr. vi. to ʒss. Decoction or infusion from ʒj. to ʒij. to ℔ij. of vehicle.——*Infusum catechu compositum.* L. (Catechu, ʒijss.; cinnamon, ʒss.; boiling water, Oss.)—E. (Same proportions of catechu and cinnamon; boiling water, f.ʒvij.; simple syrup, f.ʒj.) Dose, from ʒj. to iij. every hour.——*Astringent apozem*, P. (Catechu, ʒj.; bistort and comphrey roots, āā. ʒiv.; boiling water, ℔j.; quince syrup, ʒj.)——*Electuarium catechu compositum*, E.——*Confection of catechu*, P. (Catechu, ʒiv.; kino, ʒiij.; cinnamon and nutmegs, āā. ʒj.; opium, ʒjss.; syrup of red roses, as much as sufficient.)—D. (The same proportions, with the exclusion of nutmegs and substitution of ginger syrup in lieu of that of red roses.) Doses from ℈j. to ʒj.——*Catechu lozenges*, P. (Catechu, 1; sugar, 4; mucilage of gum tragacanth, as much as necessary, for lozenges of 12 grains each. They may be scented with a few drops of an odorous tincture.)——*Tinctura catechu*, U. S., L., D. (Catechu, ʒiij.; cinnamon bark, ʒij.; diluted alcohol, Oij.)—E. (The same proportion of ingredients, but diluted alcohol, ℔ijss.)—P. (Catechu, 3; alcohol, 12.)—Pr. (Catechu, 1; alcohol, 6.)——*Tinctura catechu composita*, Pol. (Myrrh and catechu, āā. 4; Peruvian balsam, 1; spirit of cochlearia, 64.) Dose, ʒj. to iij.——*Astringent julep*, Paris H. (Tincture of catechu, pulverized bistort root, āā. ʒij.; quince syrup, ʒj.; water, ʒiv.)

Dragon's Blood. *Resina sanguis draconis.* Resinous juice procured from the *Pterocarpus draco*, Lin. A tree growing in the neighbourhood of Santa Fé, South America, and in the Sunda Islands. It is in oval masses, in sticks or shapeless frag-

ments, hard, opaque, and brittle. It breaks smooth, shining, of a deep red colour, and almost tasteless. The oval masses are wrapt up in reed leaves. This substance, insoluble in water, almost entirely soluble in alcohol, and the composition of which is not yet known, was used as an astringent in passive hæmorrhages, diarrhœa, &c.; but its inertness, or at least very weak action, has caused it to be now altogether abandoned. It enters into the composition of several astringent preparations, of powders and dentifrice opiates.

D. & M. of Adm. Pulverized, gr. x. to ʒss. *Tinctura*, P. ℈j. to ʒss. The *calamus rotang* and the *Dracæna draco*, Lin. furnish a resin very often mistaken in commerce for dragon's blood, and possessing the same properties.

Logwood. *Lignum campechianum. Hæmatoxylum campechianum*, Lin., is procured from a large thorny tree, growing at Campechy, in America, in the island of Santa Cruz, and Jamaica. It is found in commerce in logs of different sizes, externally brown, and of a deep red colour internally; hard, compact, of an agreeable smell, of a sweetish taste becoming bitter and astringent. According to Chevreul, it contains a volatile oil, tannin, a crystalline colouring matter, soluble in boiling water, called *hematin*, salts of lime and potassa. It is very little used in France; in England, it is prescribed as an astringent, towards the termination of dysenteries, in diarrhœæ, and mucous discharges.

D. &. M. of Adm. *Decoction*, ʒss. to ℔ij. of water, boiled down to one-eighth. ——*Ext. hæmatoxyli*, L., Pol. ʒj. to ij.

Acacia Vera. *Succus acaciæ veræ.* Concrete juice, obtained from the green pods of the *Mimosa nilotica*, Lin., is found in the shape of small lumps, from four to eight ounces, wrapt up in bladders; solid, of a dark red, of an astringent taste, becoming sweetish. It consists of gallic acid, tannin, and mucilage. This substance being very rare in commerce, the Acacia nostras is often sold for it. The latter is prepared in Germany, from the green fruit of the wild plum-tree, *Prunus spinosa*, Lin., of the family *Rosaceæ*. It is harder, darker, and more acrid than the preceding. These extracts, almost out of use at present, enter into the composition of the Theriaca. The same is the case with the *juice of hypocistis*, extracted from the fruit of the *Cytinus hypocistis*, a small parasite plant of the family *Aristolochiæ*. It is in black masses of from four to six pounds, wrapt up in bladders, and of an astringent taste. These substances can be administered at the dose of ℈j. to ʒj.

Family Cupuliferæ.

Oak Bark. *Cortex roboris. Quercus robur*, Lin. A tree native of Europe, where it grows plentifully.

B. C. Male flowers, ament thin, pendulous; scales caliciform, plane, lobed; from 6 to 8 stamina, inserted on its centre. Female flowers, 3 stigmas; involucrum, uniflore, composed of imbricated scales; fruit, a nut or acorn, surrounded at its base, by a scaly cupule.

P. P. This bark is thick, rugged, full of fissures, and blackish externally, when it has been furnished by the large branches; smooth and of a bluish-gray colour, when it proceeds from young shoots; it is reddish within, and of a very styptic taste. Reduced to coarse powder, it is called *tan*.

C. P. It contains a large quantity of tannin, some gallic acid, and an extractive matter, all soluble in water.*

Incomp. Subst. Alkaline carbonates, lime water, sulphates of iron and zinc, acetate of lead, corrosive sublimate, gelatin, infusion of yellow bark.

Th. E. It is one of the most energetic astringents, on account of the great quantity of tannin contained in its composition; consequently it must be administered internally with caution; for given in too large doses, or too long continued, this substance irritates the stomach, and produces cardialgia. It was highly recommended some years ago, as a febrifuge; but it cannot be considered a succedaneum for Peruvian bark. It is used with success as an astringent, in certain dysenteries, in inveterate diarrhœa, passive hæmorrhages, leucorrhœa, and other atonic mucous discharges. Externally, it is employed in lotions and gargles.

D. & M. of Adm. *Internally.* Powdered oak bark, ʒiv. to ʒj.—Decoction, from ʒij. to ʒj., to water ℔ij.——*Decoctum quercus roboris*, E. (Oak bark, ʒj.; water, Oijss.)—L. (Oak bark, ʒj.; water, Oij.)

Externally. Roborant fomentation, Paris H. (Oak bark and red roses, āā. ʒvj.; cinquefoil, ʒj.; water, ℔j.)——*Astringent injection.* (Decoction of oak bark, ℔jss.; alum, ʒiv.)

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* [Dr. C. Conwell and Mr. J. Scattergood have lately discovered in the bark of the *Quercus falcata*, of Michaux, and other species of oak, a crystalline substance which they have called *quercia*.

They obtain it by digesting bruised oak bark, first in ether, then in alcohol, and lastly in water. They afterwards boil it with water, acidulated with sulphuric acid, in the proportion of two drachms of acid to six ounces of water: upon filtering the liquor during ebullition, a large quantity of acicular crystals are thrown down. To these crystals, dissolved in water, add bi-carbonate of soda in sufficient quantity to neutralize the acid, and quercia, in a state of purity, will be plentifully precipitated. Four hundred grains of oak bark, thus treated, yield seventy grains of *quercia*.

This substance is white, uncrystallizable, tasteless, and inodorous. It forms crystallizable salts with the mineral acids, and does not combine with the vegetable acids. Quercia, though not a metallic oxide, appears to have a stronger analogy to the earths than to the proximate vegetable alkalies. It is insoluble in ether, alcohol, and water, and destructible by heat. The neutral sulphate of quercia dissolves only in acidulated water, and is unalterable at the temperature of incandescence.]—Am. Eds.

Gall Nuts. *Gallæ turcicæ.* Excrescences growing on the leaves of the *Quercus infectoria*, Lin., a tree of Asia Minor; they are produced by the sting of an insect, called *Diplotepis gallæ tinctoriæ*, which deposits its eggs in it.

P. P. Galls are nearly round, of the size of a cherry, hard, heavy, studded with tuberosities, of a bluish-brown colour, of a bitter and astringent taste; their texture is compact. Those which are white or reddish, light and hollow, are of an inferior quality.

C. P. According to Sir H. Davy, gall nuts contain tannin, 130; gallic acid, 31; mucilage, 12; and saline matters, 12, in 500 parts; the remainder is a lignous substance. Water and alcohol dissolve the active principles.

Incomp. Subst. The same as for oak bark.

Th. E. The astringent action of this substance is still more powerful than the preceding; given in too large doses, it produces pains in the stomach and vomiting. It is used nearly in the same way as oak bark. It is employed in gargles with much success to obviate the effects of mercurial salivation.

D. & M. of Adm. *Internally.* Powder, gr. viij. to ℈j. Decoction and infusion, ℥j. to ij. to water, ℔ ij.——*Tinctura gallarum*, E., D. (Galls, 1 part; alcohol, 8 parts,) dose ℥j. to ij.)——*Astringent gargle*, Paris H. (Decoction of barley, claret wine, āā. ℥iv.; red roses, galls and pomegranate peel, āā. ℥j.; honey of roses, ℥ij.; sulphuric acid, as much as necessary to obtain an agreeable acidity.)

Externally. Unguentum gallarum, U. S. (Galls, 1 part; axungia, 7 parts.)—E. (Galls, 1 part; axungia, 8 parts.)—Paris H. (Galls and axungia, āā. equal parts.)

Family of Polygaleæ.

Ratanhy Root. *Radix ratanhiæ. Krameria triandra*, Ruiz, and *K. ixina;* shrubs growing, the former in Peru, in sandy and dry soils, and the latter in the West India Islands. Parts used, the bark of the root.

B. C. Root repent; stem ramose, hairy, whitish; leaves small, ovate, scariose; flowers in the axillæ of the superior leaves together with two bracteæ, calix, four deep divisions; corolla, irregular, four petals; three stamens, free and ascending; fruit globular, hirsute, containing two seeds deprived of endosperm.

P. P. Root woody, divided into numerous cylindrical ramifications, of the size of the little finger, of a reddish brown, of a savour extremely astringent and without the smallest taste of bitterness. The central part, *meditullium*, is woody, hard, of a pale red, and tasteless.

C. P. According to Mr. Vogel, this root contains, modified tannin, 40; gum, 1.50; fecula, 0.50; wood, 48; gallic acid, a very small quantity. Water and alcohol dissolve the active principles of ratanhia, which fluids are coloured red by them.

INCOMP. SUBST. The salts of iron, gelatin, mineral acids, &c.

TH. E. It is a very powerful astringent, and is administered with great advantage nearly in all the same cases as catechu, such as passive hæmorrhages, chronic diarrhœa, leucorrhœa, old blennorrhœæ.

D. & M. OF ADM. Decoction, ʒss. to ʒj.; boiled in 2 pints of water, down to 1 pint.——*Tinctura ratanhiæ composita.* (Ratanhy root, ʒiij.; orange peel, ʒij.; serpentaria root, ʒss.; saffron, ʒj.; rectified alcohol, Oij.)——*Watery* or *alcoholic extract*, P. doses, ℈j. to ʒss.——*Astringent mixture*, PARIS H. (Rose water, ʒiv.; extract of ratanhia root, ʒj.; diacode syrup, ʒj.)——*Astringent tisan.* (Ratanhia root, ʒss.; water, ℔ ij.; boiled down to ℔ j.; vinegar, ʒss.; syrup of quinces, as much as necessary.)

Family Rubiaceæ.

GUM KINO. *Gummi kino*, seu *gambiense.* Inspissated juice, extracted from the stem and branches of the *Nauclea gambir*, Hunter, a shrub growing in the Sunda Islands.*

B. C. Leaves opposite; flowers axillary, infundibuliform.

P. P. Small masses, opaque, hard, brittle, of a very deep red; fracture shining, almost black, inodorous, taste excessively styptic, followed by a sweetish savour.

C. P. This substance contains a good deal of tannin and extractive matter; it is very little soluble in cold; but warm water and alcohol dissolve a great part of it. The aqueous solution becomes turbid on cooling.

INCOMP. SUBST. Gelatin, sulphate of iron, the salts of silver and of lead.

TH. E. The action and administration of kino, are almost the same as those of catechu and ratanhia; however, it is but seldom used on account of its high price.

D. & M. OF ADM. Powder, gr. x. to ʒss. Decoction, kino, ʒj. to ʒij. to water, ℔ ij.——*Pulvis kino compositus*, L. (Kino, ʒxv.; cinnamon, ʒiv.; opium, ʒj.) 20 grains of the powder contain 1 grain of opium. Dose, from gr. 10 to ℈j. ——*Astringent powder.* (Sulphate of copper, gr. x.; kino, ʒi.; gum arabic, ʒij.) Dose, gr. x. to xv.——*Tinctura kino*, U. S., L. (Kino, ʒiij; proof spirit, Oij.)—E. (Kino, ʒiij.; proof spirit, Ojss.)—D. (Kino, ʒij.; proof spirit, Ojss.) Doses from 1 to 2 drachms.——*Astringent mixture.* (Tincture of Kino, ʒiv.; infusion of red poppy flowers, ʒiv.; syrup of quinces, ʒij.) Dose, two tablespoonfuls every four hours.

MADDER ROOT. *Radix rubiæ tinctorum. Rubia tinctoria*, Lin. A perennial plant, cultivated in many parts of Europe. It is knotty, of the size of the little finger, reddish externally, yellowish internally, and of a bitter and acrid taste. It contains a red co-

* [Besides the East India kino, Dr. Thomson describes three other species, viz: The African kino, *Pterocarpus erinacea*, a tree, native of Senegal—the Botany Bay kino, *Eucalyptus resinifera*—and the Jamaica kino, *Cocoloba uvifera.* They all possess very nearly the same properties.]—AM. EDS.

louring matter, which renders it useful in the arts. It has the property of colouring red the bones and secretions of animals which are fed on this root for a length of time. It was considered as slightly astringent and tonic, and was administered in rachitis, dysentery, and mucous discharges; but its action is so weak, that it is now entirely abandoned.

The same has happened with the *Asperula cynanchica*, Lin. which was used in gargles in the beginning of angina; and with the *Gallium verum*, Lin., which was given as a mild astringent and antispasmodic.

Family Meliaceæ.

[The *Swietenia febrifuga*, Lin., a large tree growing in the mountainous parts of the East Indies, and resembling the *S. mahogany*, furnishes a reddish bark, brittle, compact, and covered with a gray and rough epidermis. According to Dr. Roxburgh, this bark is employed in India as a substitute for bark, and he asserts that it contains a much larger proportion of active bitter and astringent principles, and is more antiseptic than bark. It seems, however, to be merely an astringent bitter, containing no cinchona. Dr. Roxburgh sent from India a quantity of this bark, which could not be distinguished from the kino of the shops. The *Swietenia mahogany*, a species of the same genus, possesses the same properties, and may be employed to answer similar indications.]

Family Diospyreæ.

[Persimon. *Diospyros Virginiana*, Lin. an indigenous and very common tree in all the sections of the United States. P. U. The bark.

B. C. Stem from fifteen to forty-five feet high; trunk straight, with a smooth bark, and spreading branches; leaves alternate and entire; flowers lateral, axillary, solitary, and nearly sessile; calix spreading, persistent, 4 to 6 cleft; corolla urceolate, yellowish, with as many segments as the calix; stamina from 8 to 16; stigmas from 4 to 5; fruit a globular yellow berry, similar to a plum, with a thin skin, fleshy pulp, and many compressed, hard seeds.

P. P. The outer bark is very astringent and styptic, the inner bark very bitter; the latter has been used very successfully in intermittent fevers. The late Professor Barton employed it with advantage in ulcerous sore throat. The ripe fruit, which is edible, is said to have been useful in cases of worms.]

Family Polygoneæ.

Bistort Root. *Bistortæ radix. Polygonum bistorta*, Lin. Perennial plant indigenous to Europe, growing in elevated meadows. P. U. The root.

B. C. Stem herbaceous, straight, one or two feet high; radical leaves cordiform, whitish underneath, the caulinary smaller, almost sessile, semi-amplexicaule, flowers rose colour, in an ovoid spike; fruit ovoid, triangular, smooth, with a single seed.

P. P. Root of the size of the small finger, twisted in a spiral line, and presenting at every curve a kind of articulation; brown externally, reddish internally, inodorous, and of a very striking astringent taste.

C. P. It contains a good deal of tannin, some gallic acid, starch, and oxalic acid. Water and alcohol dissolve its active principles.

Incomp. Subst. Sulphate of iron, gelatin, &c.

Th. E. It is one of the best astringents, indigenous to Europe, that the materia medica contains. It is exhibited with success in chronic discharges, in passive hæmorrhage of the lungs and bowels, atonic diarrhœa, &c. Associated with gentian root, or other bitter substances, bistort is recommended in intermittent fevers.

D. & M. of Adm. Powder, ʒss. to j. Decoction, ℥j. to ij. to ℔ij. of water.——*Pulvis detribus*, Paris H. (Gentian, ʒss.; bistort and pœonia roots, āā. ℥ij.——*Anti-febrile powder*, (Bistort and calamus aromaticus, āā. ʒiij.; ginger, ʒj.; hydrochlor. of ammonia, ℈iv.) for 8 doses.——*Stomachic mixture*, Paris H. (Bistort, ʒj.; elder rob, ʒiij.; simple syrup, ℥j.; water, ℥iv.)——*Astringent enema*, Paris H. (Bistort, ℥j.; poppy heads, ʒss.; water, ℔ij.)——*Astringent fomentation*, Paris H. (Bistort, and pomegranate bark, āā. ℥ij.; red wine, ℔j.; hydrochlor. of ammon. ʒij.)

Family Geraniaceæ.

[Spotted Crane-bill. *Geranium maculatum*, Lin. A North American perennial plant, growing in shady woods and meadows from Canada to Carolina. P. U. The root.

B. C. Stem erect, terete, hairy, becoming forked at the height of 6 to 10 inches, and garnished at this point of division with a pair of large leaves, supported on petioles less than one-half of the length of those of the radical leaves; the superior leaves are generally much the largest. Flowers geminate on peduncles arising from the dichotomous division of the stem. Petals 5, obovate, entire, rose-coloured with purple veins, stamina 10, with glands at the base. Germ egg-shaped; style the length of the stamens at first, but becoming afterwards elongated and persistent. Five stigmas; fruit, capsule containing 5 seeds.

P. P. Root thick, rough, knobby, of a dark brown colour externally; of a pale flesh colour internally, taste astringent without being bitter, and inodorous.

C. P. According to the following analysis furnished to us by Dr. E. Staples, this plant contains gallic acid, tannin, mucilage, starch, red colouring matter, and probably a crystallizable vegetable substance.

Th. E. Boiled in milk, it proves an efficacious medicine in cholera infantum and diarrhœa. A decoction of the root is very useful in aphthous affections of the mouth and throat. The native Indians consider it a valuable remedy in syphilis. The in-

fusion has been used with success, as an injection, in gonorrhœa and gleets, and has succeeded in stopping hæmorrhages, by applying the pulverized root to the bleeding orifice. Dr. Thacher observes, that he has known the infusion of this substance to restrain hæmorrhage from the lungs in a very prompt manner.

D. & M. of Adm. Powder, from 15 to 25 and even 35 grains. *Extract* from 12 to 15 grains. *Tincture*, (Geranium root, 2; alcohol, 16;) from ʒij. to iv. Decoction, ℥j. to jss. boiled in half a pint of water; 1 or 2 table spoonfuls may be given at once.]

Family Orobanchoideæ.

[Beech Drop, or Cancer Root. *Orobanche Virginiana*, Lin. An indigenous parasitic plant, growing almost exclusively on the exposed root of the beech tree. P. U. The whole plant.

B. C. The plant is somewhat fleshy and devoid of verdure, the stem is glabrous, much branched and furnished with scattered ovate scales, instead of leaves. Flowers numerous, remote, alternate; the fertile ones small; the infertile tubular, moderately large and bilabiate. Capsule unilocular, 2 valved, polysperm.

P. P. The whole plant is powerfully astringent, and the root is of a brownish colour, spongy, and of a very nauseous bitter taste.

Th. E. It has been employed as an astringent by many of our practitioners; and in some parts of our country, in domestic practice, in diarrhœa, dysentery and hæmorrhages. We are, however, better acquainted with its external than internal employment, and therefore it has been occasionally employed with some success in obstinate ulcers, and in aphthous and in chronic cutaneous affections.

The One-flowered Cancer Root, *Orobanche uniflora*, Lin., a plant of the same genus with a naked uniflore scape, is used in the same manner and to fulfil the same indications as the preceding article.

D. & M. of Adm. *Externally*. Almost any quantity of the infusion as a gargle or a wash.]

Family Saxifrageæ.

[American Sanicle. Alum Root. *Heuchera Americana*, Lin. *H. Viscida*, Pursh. A perennial native plant, growing in fissures of rocks, &c. P. U. The root.

B. C. Stemless; scapes numerous from a single root, naked, terete, smooth under ground; and just where they emerge from it, of a bright carmine colour; higher up they become very hairy and of a green colour, frequently attaining the height of two or three feet. Leaves all radical, cordate, five or seven-lobed, lobes rounded and toothed. Flowers small, on a long, loose, pyramidal panicle or thyrsus; calix five-parted; petals minute, rose-coloured; filaments yellow; anthers small, red and globular. Germ bifurcate at the summit. Capsula consisting of two long beaks, containing numerous small seeds. The whole plant covered with a viscid pubescence.

P. P. Root irregular, knotty, slightly compressed, of a yellowish colour, and intensely astringent.

Th. E. This root is a powerful astringent styptic. It is one of the articles of the materia medica of our Indians, who use the pulverized root to powder wounds, ulcers, and cancers. It is the base of a powder which has lately acquired some reputation in the cure of cancers.]

Family Plumbagineæ.

[Marsh Rosemary. Sea Lavender. *Statice Caroliniana*, Walt. An indigenous maritime plant, very nearly related to the *Statice limonium* of Europe, and growing in our salt marshes. P. U. The roots.

B. C. Scapes alternately and numerously branched, about one foot high. Leaves narrow, obovate, lanceolate, mucronate below the apex, entire and veinless. Ramuli corymbose. Flowers in ramose, divaricate panicles of a blue colour; calix monophyllous, tubular, five-angled, the angles ciliate, and ending in long acute teeth, with sometimes minute intermediate teeth; corolla hypocrateriform, five-sided. Capsule unilocular, with one seed.

P. P. The root is one of the most powerful astringents in the vegetable materia medica. It communicates to the mouth a highly austere and astringent taste, combined with a good deal of bitterness. It contains evidently a very large quantity of tannin and gallic acid.

Th. E. The Statice caroliniana, is very much used in decoction, as a topical remedy in ulcerated affections of the mouth and throat, and from its astringent and antiseptic quality, great advantage generally follow its exhibition. Dr. Baylies administered the decoction both internally and externally in cynanche maligna, and it proved very beneficial; other physicians have exhibited it also in the same dangerous complaint, with equal success. Dr. Mott asserts, that in chronic stages of dysentery, after the inflammatory diathesis, tenesmus, &c. have been removed, a strong decoction of the root has restored patients to health, after various tonics and astringents had been used to no purpose.]

Family Amentaceæ.

[Sweet Fern. *Comptonia asplenifolia*, Aiton. *Liquidambar asplenifolium*, Lin. A small and very aromatic shrub, growing abundantly in almost every section of the United States. P. U. The whole plant, but chiefly the leaves.

B. C. Stems slender, branched, with a profusion of lanceolate leaves, about three or four inches long, deeply cut into roundish notches down nearly to the rib. Male catkins about one inch or more in length; female ones, situated lower on the stems than the male, seldom exceeding half an inch in length; they are ovate and of a red colour. Fruit, little nuts of an oval shape, flattened, sessile, and nearly concealed by the persistent segments of the corolla.

Th. E. The sweet fern is a tonic astringent, frequently exhibited in the form of a decoction, in diarrhœa and cholera infantum. It forms a very agreeable drink for children in the above diseases, and from its moderate astringency and tonic effect on the bowels, it will always be found to be an useful auxiliary in the treatment of this disease. Dr. Barton has employed it with encouraging success.]

Family Myrtaceæ.

Pomegranate. *Punica granatum*, Lin. A shrub coming originally from the north of Africa, cultivated in the south of Europe. P. U. The unexpanded flowers, *Balaustii*, Balaustine; the rind of the fruit, *Malicorium;* and the bark of the root, *cortex radicis punicæ.*

B. C. Trunk irregular, furnished with small thorns; leaves elliptic, shining; flowers terminal, of a bright red colour; calix coloured, campanulate; corolla, five petals; ovary inferior, with many cells; fruit globular, dry, scariose, of a reddish-yellow, containing numerous fleshy seeds.

P. P. The desiccated flowers are red. The rind of the fruit is in dry fragments, hard, rough, reddish externally, yellow within; the bark of the root is in small fragments of a yellowish-gray externally, and yellow internally. These substances are inodorous and of a very astringent taste, without bitterness.

C. P. The flowers and the *Malicorium* contain a large quantity of tannin and gallic acid. The bark of the root is composed, according to Mitouart, of a pretty abundant fatty matter, tannin, gallic acid, a resinous matter, mannite, sugar, and lignous fibres.

Incomp. Subst. The same as for the preceding articles.

Th. E. All the parts of the pomegranate tree are endowed with very energetic astringent properties; the flowers and the *Malicorium* are used in the same cases as catechu, bistort, &c. The bark of the root, besides its mere astringent properties, seems to exercise upon the intestinal canal; and even on the tænia, a particular action, which induces the expulsion of this worm. This, however, may be owing to its uncommon astringent power. The numerous cases of cures of this kind, even of a serious character, recently collected in France and elsewhere, no longer admit any doubt on the efficacy of this substance as an anthelmintic. Its administration must be attended to with great precaution, for, if given in too large doses, it produces vomiting, colics, and pains in the stomach; it appears, likewise, to act upon the nervous system, as is evinced by the dizziness, the state of intoxication and stupor, which it sometimes produces.

D. & M. of Adm. *Flowers.* Infusion, ℥ss. to ℥j. to Ibij. of water.—*Malicorium.* Pulverized, ℥ss. to ℥j.—*Infusion*, ℥ij. to ℥iv. to Ibij. of water.—Pulve-

rized bark of the root, gr. xij. to ʒss.—Decoction, ʒij. to ℔ij of water, reduced to j.; this quantity is taken in three doses, at intervals of half an hour.

The leaves and bark of the Common Myrtle, *Myrtus communis*, Lin., were once used in atonic and mucous discharges. This shrub, belonging to the same family as the preceding, grows spontaneously in the south of France; but it is no longer in use.

Family Rosaceæ.

Red Rose. *Rosæ rubræ flores. Rosa gallica*, Lin. A shrub growing in the south of France. P. U. Petals of the unexpanded flowers.

B. C. Stems straight, ramose, furnished with numerous reddish prickles; leaves alternate, petiolate, composed of from three to seven oval and sessile folioles; flowers, of a fine crimson red; calix urceolate, persistent, globular; fruit, contained in the tube of the calix.

P. P. Petals of a deep red colour, of a faint smell, but pleasant; of a bitter and styptic taste.

C. P. According to Cartier, they contain tannin, gallic acid, a colouring matter, an essential oil, a fatty matter, albumen, some soluble salts with base of potassa, insoluble salts with base of lime, some silica and oxide of iron. Water, alcohol, and vinegar dissolve their active principles.

Incomp. Subst. Sulphates of iron, of zinc; gelatin, lime, water, &c.

Th. E. The red rose is astringent, tonic, and is exhibited with advantage in passive hæmorrhages, mucous discharges, colliquative diarrhœa, and other similar affections.

D. & M. of Adm. Infusion, one or two pinches to a pint of boiling water.——*Infusum rosæ compositum*, U. S., L., D. (Red roses, ʒiv.; boiling water, Oijss.; diluted sulphuric acid, f.ʒiij.; sugar, ʒjss.)——*Infusum rosæ gallicæ*, E. (Red roses, ʒj.; boiling water, ℔ijss.; diluted sulphuric acid, ʒss.; sugar, ʒj.)——*Syrupus rosæ gallicæ*, E. (Red roses, 1 part; boiling water, 9 parts; sugar, 10 parts.)——*Honey of roses*, L., D. (Red roses, ʒiv.; boiling water, Oiij.; honey, ℔v.)——*Confectio rosæ gallicæ*, U. S., L., E., D. (Red roses, 1 part, white sugar, 3 parts.) Dose from one to two drachms; this preparation is frequently used as excipient of active remedies.——*Vinegar of roses*, P., Den. (Red roses, 1; vinegar, 16.)——*Tinctura rosarum acidulata*, Pr. (Red roses, 3; diluted sulphuric acid, 1; water, 24.) ʒss. to j.——*Honey of Roses*, P. (Red roses, 1; boiling water, 4; purified honey, 6.)——*Mel rosarum*, Pr., Pol., F., A., R. (Red roses, 1; honey, 12; water, 6;) ʒj. to ʒij., in enema, gargles, lotions.

The ripe fruit of the Sweet Briar, *Rosa canina*, Lin., called in French *Cynorrhodon*, possesses an acid and astringent taste, and seems to contain some free citric acid. It is used to prepare the conserve of cynorrhodon, P. *Confectio rosæ caninæ*, L., which is sometimes administered, as a slight astringent, in chronic diarrhœa, &c. in the dose of from ʒij. to ℥j.

Tormentil Root. *Tormentillæ radix. Tormentilla erecta*, Lin., a perennial plant, indigenous to Europe, growing in fields and woods, principally in the Alps and Pyrenees. P. U. The root.

B. C. Stem herbaceous, scattered; leaves pinnate, three to five leaflets; flowers yellow, small, axillary, single; calix, eight divisions; corolla, four petals; fruit globular, naked, attached to a dry receptacle.

P. P. Root irregular, knotty, thick, tubercular, of a brown colour externally, reddish within, of a slightly aromatic smell, of a very astringent and somewhat bitter taste.

C. P. It contains a great proportion of tannin, soluble in boiling water and alcohol.

Incomp. Subst. The same as with bistort, catechu, &c.

Th. E. This substance is very astringent, and is exhibited in most of the same cases in which catechu is employed, but it is now very little used.

[The Water-avens. *Geum rivale.* A native plant, differing from the European only by a few botanical peculiarities, such as its having smaller flowers, petals more oval at the summit, and leaves with deeper incisions. Its properties are very similar to those of the preceding; its roots are powerfully astringent, and are much employed in Canada and the northern states in intermittent fevers. A decoction is used, with marked advantages, as a gargle and a drink, in ulcerated sore throats, &c.]

Benet or Avens. *Cariophyllatæ radix. Geum urbanum*, Lin. Perennial plant, indigenous to Europe, growing in woods and shady places. P. U. The root.

B. C. Stem herbaceous, straight, villose; radical leaves composed of nine leaflets deeply dentate; the caulinary almost sessile, composed of three leaflets, accompanied with two stipules, flowers small, yellow, terminal; calix spreading, with five deep divisions; thirty stamens; fruit surmounted by a point forming a hook at its extremity.

P. P. Root of the size of a quill, from which starts numerous fibres; brown externally, pale red internally; of a smell nearly similar to cloves, when it is fresh; and of an astringent, aromatic, and slightly bitter taste.

C. P. According to Tromsdorff, it contains tannin, 410; resin, 40; volatile oil, 0.39; adragantin, 92; gummous matter, 158; and lignous fibres, 300; water and alcohol dissolve its active parts.

Incomp. Subst. The salts of iron, gelatin, &c.

Th. E. Benet possesses astringent and tonic properties, for which it is employed with success in the last stage of dysentery, in chronic diarrhœa, chronic catarrhs, passive uterine hæmorrhage, and in intermittent fevers.

D. & M. of Adm. Powder, ℈j. to ʒj. Decoct. ʒj. to ℔ij. of water, reduced to one-third. *Tincture.* (Benet, 1; alcohol, 16.) ʒij. to ʒss.

The Dew-berry, *Rubus procumbens*, Lin.; the Black-berry, *R. villosus*, both native shrubs, and the European Black-berry, *Rubus fructicosus*, Lin., are all slightly astringent. The decoction of the roots of these plants is quite a popular medicine, and is frequently employed in diarrhœa, cholera infantum, chronic affections of the bowels, and excessive purging. It is also employed, either internally or externally, especially as a gargle, in chronic sore throat and aphthous inflammations of the mouth. As an astringent, this article may be successfully exhibited whenever such remedies are indicated. It has also been employed with advantage as an application in the form of a poultice over hæmorrhoidal tumours. The dew-berry root seems preferable to that of the black-berry. Dr. Chapman recommends it as an excellent astringent, very efficacious in the last stages of dysentery, and in atonic diarrhœa of old persons.]

[The Witch-hazel. *Hamamelis Virginiana*, Lin. A native shrub growing on hills, near stony banks, on streams. P. U. The bark.

B. C. Stem irregularly branched, from ten to fifteen feet high; leaves large, petiolate; flowers on short peduncles, from three to five together, blooming in the fall; calix small; four linear and yellow petals; four stamens; pistil oval, central, with a short style and two stigmas; fruit, a nut-like capsule, resembling a hazel-nut, but bilobed, bicelled, and containing two black seeds. It does not ripen till the next September, when the new blossoms and ripe fruits will be found together on the same tree.

P. P. This bark is slightly bitter and astringent, leaving a pungent sweetish taste, which remains for a considerable time.

Th. E. Its properties are not accurately ascertained, but it seems to deserve the particular attention of our practitioners. It is said to be sedative and discutient, and is commonly applied by the Indians, as a poultice, to painful and inflamed tumours. The inner rind is employed also as a cataplasm in severe and painful inflammations of the eyes, and has been found very efficacious.]

[The Sorrel Tree. *Andromeda arborea*, Lin. A small native tree, very common in our forests, is sometimes used by the country people as an astringent both internally and externally; the same is the case with the *Andromeda mariana*, Lin., which was suspected by the late Dr. Barton to be a poisonous shrub, and which has been used with success, in decoction, as a wash, in a disagreeable ulceration of the feet, common among the slaves of the southern states.]

Family Therebintaceæ.

[The Narrow-leaved Sumach, *Rhus copallinum*, Willd., The Pennsylvania Sumach, *R. glabrum*, Willd., and the Virginian Sumach, *R. typhinum*, Willd., are all native plants of North America, possessing considerable astringent properties. They are frequently exhibited as a gargle in sore throats, and for cleansing the mouth in putrid fevers.

The following plants are natives of Europe, and possess astringent properties, but are not enough important or sufficiently known and employed to deserve our entering into any very minute details about them in a work of this nature: we shall, however, give their names in full.

Silver-weed,	*Potentilla anserina.*
Cinquefoil,	*Potentilla reptans.*
Wild Strawberry,	*Fragaria vesca.*
Agrimony,	*Agrimonia eupatoria.*
Ladies Mantle,	*Alchemilla vulgaris.*
Meadow-sweet,	*Spirea ulmaria.*
Sumach,	*Rhus coriaria.*
Common Cypress,	*Cupressus sempervirens.*
Tamarisk Tree,	*Tamarix gallica.*
Large and small Periwinkle,	*Vinca major & minor.*
Stinking Crane-bill,	*Geranium robertianum.*
Bloody Crane-bill,	*Geranium sanguineum.*
Eye Bright,	*Euphrasia officinalis.*
Broad-leaved Plantain,	*Plantago major.*]

CHAPTER V.

TONIC SUBSTANCES.

TONICS, (τονόω, I strengthen,) are remedies, the general action of which upon the economy has a tendency to increase the energy of the organs. No very distinctive mark exists between these remedies and astringents; but in larger doses, they exercise, on most of the vital functions a direct influence, independent of their local action. In this last case, the contractions of the heart become more energetic, without, however, increasing in frequency, and the pulse, at the same time that it acquires strength, becomes harder, closer in its beat, and fuller; nevertheless, the colour of the skin does not brighten and the animal heat does not increase, unless the tonic remedies be exhibited for a long time: but then these phenomena, as well as the acceleration of the circulation which accompanies them, are only the secondary effects produced by the increase of nutrition and not by the direct influence of the tonics on the nervous system. These remedies activate nutrition, not only by their action on the whole economy, but also by the modifications which they impart to the digestive organs. They render digestion more rapid and more perfect, the fecal matters more consistent; they diminish their quantity and even produce constipation.

The action of the tonics on the secretory organs is likewise very evident. They have always a tendency to strengthen them and to augment their energy, and nevertheless, directly opposite effects may result from this action. Thus, when the superabundance of the products of secretion is caused by the weakness of the organ, these remedies have evidently a tendency to diminish them, by bringing back the secretory tissue to the normal state; when, on the contrary, secretions are lessened by the torpor of the organs, they are again re-established under the influence of tonics, and therefore they often act as diuretics, diaphoretics, emmenagogues, expectorants, &c.

Tonic remedies are generally derived from the vegetable and mineral kingdoms. The vegetable tonics are remarkable for the bitter principles they contain and to which they owe in a great measure their therapeutical properties. In most of them, this bitter principle presents all the characters of alkalinity, such are quinia, cinchonia, &c. Formerly, these different bitter principles were confounded under the name of *extractives*; but we know

at present that the extractive is a product, the composition of which varies according to the nature of the plant which furnishes it. However, in the analysis of many vegetables, we still designate under this name a bitter substance containing nitrogen, and soluble in water and alcohol. Besides these bitter principles, the tonic remedies often contain tanning substances, gallic acid, &c.; this circumstance shows a great analogy between the proximate principles of tonics and astringents; but in general, the proportion of these substances is small, and we must not ascribe to them their direct action on the animal economy. The tonics furnished by the mineral kingdom are still more similar to astringents; and there is no chemical test by which they may be distinguished. As to the tonic animal substances, hardly any other except beef's gall, have been as yet exhibited.

We take advantage of the strengthening influence which tonics exercise upon the whole economy, to restore the general strength, and the energy of the organs in many affections. It is principally in the treatment of intermittent fevers and certain periodical affections, such as neuralgia, that the employment of remedies of this description is, as it were, universally adopted. Their effects, in these cases, are so peculiar, that several of these remedies have, for a long time, been considered as specifics and designated under the names of *febrifuge* and *anti-periodical.* Are we to attribute these happy results to their tonic action? We are inclined to believe this to be the case, for, administered during the apyrexia, they prevent the return of the disease, by imparting to the whole system unusual energy and activity; whilst, when given during the paroxysm, they augment the intensity of the symptoms, and become injurious for the same reasons, that they have been useful in the former stage.

The administration of tonics is likewise indicated in essentially atonic diseases, such as adynamic fevers, gangrenous, scorbutic, and scrofulous affections. They are used with the same success in almost all chronic inflammations, when there no longer exists either fever or pain; in cases of weakness of the digestive organs, &c.

It is evident from what we have just stated, that we must abstain from exhibiting these remedies, whenever the digestive canal, or any other important organ, is in a more or less lively, inflammatory state.

Tonics are employed externally in many cases, and especially in atonic or gangrenous ulcers. Their action, in this circumstance, is very similar to that of astringents.

Tonic Mineral Substances.

Iron Filings. *Ferri scobs seu limatura.* This metal, the most abundantly spread in nature, is met with, under a variety of forms, almost all over the globe.

P. P. It is solid, of a bluish-gray, very ductile, tenacious, hard, of a granular texture, is attracted by the magnet, susceptible of becoming itself a magnet; of a slightly styptic taste, of a peculiar smell, which is developed by friction, and of the specific gravity of 7.788.

C. P. Exposed to the moisture of the air, it absorbs oxygen and carbonic acid, and is transformed into oxide and sub-carbonate; it burns rapidly at a high temperature and passes to the state of oxide; it is decomposed by water, and melts at 130° of Wedgwood's pyrometer.

P. P. Iron filings proceeding from pin factories are preferable, because they do not contain any copper as those of the other manufactories; it might, however, be freed from this metal by means of a magnetized bar. Thus purified, it is porphyrized.

Th. E. Iron and its different preparations are endowed with a very manifest tonic action, which affect the animal economy but slowly. It is on the digestive canal that the tonic influence of these remedies is at first exercised; they increase, in a slow and almost insensible manner, the digestive powers; excite appetite, and assist powerfully the stomach in elaborating the alimentary substances. By means of the constriction they induce, they repress the quantity of intestinal secretions, even as to produce constipation; finally, they blacken the fecal matter; which circumstance induces the presumption, that the different preparations of iron are reduced into the state of deutoxide by the action of the digestive organs. In consequence of this local action, the particles of iron absorbed and carried into the blood, as Messrs. Tiedemann and Gmelin's observations have proved to be the case, soon manifest their influence on the circulation and even on the blood itself; it is, moreover, this influence which more especially characterizes their medication. It is, however, extended to the whole economy. After having used iron for some time, the pulse becomes more developed, stronger and more frequent; and these effects are produced by the augmentation of the activity of the heart; the colour of the face becomes more florid, the blood itself seems more vivid, and the muscular motions, together with all the functions, seem to be performed with more energy and regularity. These phenomena are particularly observable on weak persons of a relaxed and lymphatic temperament, whose circulation is slow, the face pale, and the vital actions possess little energy.

If the employment of these martial preparations be continued too long, or if they be administered in too large doses, or to individuals of a robust, plethoric and sanguine temperament, we soon discover that they produce, at first, pains in the stomach, nidorous eructations, colics, afterwards cephalalgia with congestion of blood in the head, active hæmorrhage, and especially epistaxis, menorrhagia, &c.; and, in general, all those affections produced by plethora.

From these considerations, we may infer that iron and all its various preparations, must be very useful in all affections characterized by general weakness and torpor of the organs; and this is proved in a positive manner by experience. They are administered with success in chlorosis, in the amenorrhœa caused by a general asthenic state; in some cases of chronic engorgements of the abdominal viscera which often occur after intermittent fevers; in scrofulous affections, mucous discharges caused by the atony of the membranes, in some cases of diabetes, convalescence from violent diseases, in order to promote the digestive powers, and finally, in all the atonic affections which are accompanied by paleness and the œdematous state of the skin, and in other indications of general atony. These remedies will, on the contrary, aggravate the disease in all cases attended with plethora or in an acute inflammatory affection.

Metallic iron is employed in preference in dyspepsia, hysteria, chlorosis, especially when these affections are accompanied with acidity of the *primæ viæ*.

D. & M. of Adm. Gr. v. to ʒss. gradually, in pills, or united with some bitter extract.——*Iron lozenges*, P. (Iron filings, 4; cinnamon, 1; sugar, 40; mucilage of gum tragacanth, a sufficient quantity.)—Paris H. (Iron filings, chocolate, āā. 4; saffron, 1; mucilage, a sufficient quantity; for 12 grains lozenges.) Dose, 3 or 4 a day.——*Vinum ferri*, U. S., D. (Iron wire cut in pieces, ʒiv.; Rhenish wine, Oiv.)—L. (Iron filings, ʒi.; super-tartrate of potassa, ʒvj.; distilled water, Oij.; proof spirit, f.ʒxx.)——*Chalybeate wine*, P. (Iron filings, 1; white wine, 32.)——*Vinum martianum*, Pr., F. (Iron filings, 2; cinnamon, 1; Rhenish wine, 24.) From 2 drachms to half an ounce 2 or 3 times a day.——*Anti-chlorotic powder*, Paris H. (Iron filings, ℈j.; Peruvian bark, ʒj.; cinnamon, ʒss.; for 12 doses.)——*Stoll's tonic pills*, (Iron filings, gum ammoniac, extract of small centaury, āā. ʒj.; syrup of fumitory, a sufficient quantity, for 6 grains pills.) Three pills a day.——*Sydenham's martial pills*. (Iron filings, ʒij.; cinnamon, gr. xviij.; extract of wormwood, a sufficient quantity; for four grains pills.) Nine a day.

Black Oxide of Iron. *Ferri oxidum nigrum. Æthiops martialis. Magnetic oxide of iron.* Mixture of deutoxide and protoxide of hydrate of iron. It is found abundantly in nature, principally in Sweden; and the *loadstone* is one of its varieties.

P. P. A black powder, more or less intense in colour, staining paper, inodorous, of a ferruginous taste, attracted by the magnet and of the specific gravity of 5.107.

C. P. It consists according to Berzelius of iron 100, and oxygen 39.31, and according to Thénard, it is composed of protoxide and deutoxide of iron. It is insoluble in water; but it dissolves in acids without effervescence.

Prep. Expose purified and carefully washed filings of iron to the protracted action of water, stir the mass every now and then, at a temperature of 20° to 25° Centig. (68° to 77° Fahr.)

Th. E. See page 103.

D. & M. of Adm. Gr. v. to ℥j., in powder or pills.——*Emmenagogue pills*, Paris H. (Black oxide of iron, gr. j.; saffron and valerian root, āā. gr. ij.; syr. of mugwort, q. s. for 1 pill.) From four to eight a day.

Peroxide of Iron. *Oxidum ferri rubrum.* Red oxide of iron. Colcothar, &c. This substance exists in great quantity in nature, under the name of *hematite* or *blood-stone*, oligist iron, &c.; but it is generally very impure.

P. P. Friable masses of a violet-red, or a powder of a lively red colour, staining the fingers, inodorous, insipid, not attracted by loadstone.

C. P. This oxide contains iron 100, oxygen 44.22. It attracts the carbonic acid of the air and is converted into a carbonate; it is insoluble in water, and soluble in several acids.

Prep. It is obtained by the decomposition, by heat, in a crucible, of the proto-sulphate of iron; the residue is pulverized, and washed until it contains no more sulphuric acid.

Th. E. See page 103.

D. & M. of Adm. The same as those of the preceding article.

Sub-carbonate of Iron. *Ferri sub-carbonas.* Brown oxide of iron. Rust of iron.

P. P. Powder of a reddish-brown, inodorous, of a slightly styptic taste.

C. P. The composition of this substance varies according to the mode of preparation employed to obtain it; it contains generally, more or less of the protoxide and deutoxide of iron; it is insoluble in water, very little soluble in an excess of carbonic acid. Acids dissolve it with effervescence.

Prep. Submit iron filings to the action of the humidity of the air, or decompose the sulphate of iron by an alkaline sub-carbonate.

Th. E. Amongst the ferruginous preparations, the rust is the most commonly used. It possesses the same properties, and is administered under the same circumstances as metallic iron; it is moreover employed with much success in England, according to Dr. Hutchinson's method, as an anti-periodic, in *tic doulou-*

reux of the face, and several other intermittent neuralgiæ. We have administered it in several cases of this nature, and have obtained, if not a complete cessation, at least a considerable diminution of the pain.

D. & M. of Adm. As a tonic, gr. xv. to ʒj.; and as an anti-periodic, ʒj. to iij. a day, in three doses.—— *Tonic bolus*, Dr. Paris. (Sub-carbonate of iron, gr. x.; valerian, ʒss.; ginger syrup, q. s.)——*Eau rouillée*, (aerated water, in which pieces of rusted iron are immersed.) See ferruginous mineral waters, p. 108.

Tartrate of Potassa and Iron. *Potassæ et ferri tartras.* Martial tartar or soluble chalybs. This salt is always an artificial product.

P. P. Small, greenish needles, or brown powder, somewhat greenish, inodorous, of a styptic taste.

C. P. As is indicated by its name, it is a salt with a double base, very often mixed with metallic iron or the oxide of this metal. It is very deliquescent, and consequently very soluble in water.

Prep. Boil in seven parts of water, two parts of iron filings, and five of super-tartrate of potassa, until the liquor is no longer acid; filter and evaporate the solution.

Incomp. Subst. Powerful acids, lime water, hydro-sulphuric acid, hydro-sulphates, and astringent vegetable infusions.

Th. E. The tartrate of iron possesses the same properties as the other martial preparations, (see page 103,) except that its action is less energetic; therefore, it is administered to children in those cases in which the exhibition of ferruginous preparations is required. It is likewise used externally as an astringent and resolvent in contusions, sprains, &c.

D. & M. of Adm. *Internally*, gr. xij. to ℈j.; and even ʒss. in a solution, or in pills with a bitter extract.——*Tartarized tincture of Mars*, P. (Concentrated solution of tartrate of potassa and iron at 30° of Baumé's areometer, about 400; alcohol, 40.) Dose, gut. xx. to xl.——*Astringent pills*, Dr. Paris. (Tartrate of potassa and iron, gr. x.; columbo, gr. xv.;) three or four a day.

Externally. Boules de Nancy, P. *Globuli martiales*, A., Den., Pr. (Iron filings, 1; red tartar, 2; alcohol, q. s.;) dissolved in water, they form the *Eau de boule.*

Proto-chloride of Iron. *Ferri murias sublimatus.* This salt is always the product of art.

P. P. Crystalline scales, very small, whitish or brown, inodorous, and of a styptic taste.

C. P. This very deliquescent salt, passes, when it absorbs water, into the state of hydro-chlorate; exposed to the air, it attracts oxygen, and is converted into a hydro-chlorate of peroxide of iron.

Prep. Melt with a powerful heat in a crucible covered over by another crucible inverted, some dried hydro-chlorate of iron, obtained by the action of the liquid hydro-chloric acid upon some iron turnings; the chloride volatilizes and condenses in the superior crucible.

Incomp. Subst. Alkalies and their carbonates, astringent vegetable infusions, and mucilage of gum arabic.

Th. E. Proto-chloride of iron, besides the properties peculiar to the other martial preparations, seems to possess a very decided stimulating action. It is, in general, very little used.

D. & M. of Adm. *Bestuchef's Tonic tincture*, P., A. (Chloride of iron, 1 part; spirit of sulphuric ether, 9 parts.) Dose, from ten to fifteen drops.—— *Alcohol ferratus*, F. (Chloride of iron, 1; alcohol, 6.) Same doses.

The Hydro-chlorate of Peroxide of Iron, dissolved in alcohol, forms the *Tinctura muriatis ferri*, U. S., D. (Carbonate of iron, ℔ss.; muriatic acid, ℔iij.; form a solution, pour off the clear liquor and evaporate it slowly to one pint, and when cold, add alcohol, Oiij.)—L. (Carbonate of iron, ℔ss.; muriatic acid, Oj.; rectified alcohol, Oiij.)—E. (Black oxide of iron, ℥iij.; muriatic acid, about ℥x.; digest and filter, and afterwards add as much alcohol as will make the whole liquor amount to two pounds and a half.) Dose, from ten to thirty drops.

Hydro-chlorate of Iron and Ammonia. *Ammoniæ et ferri murias. Ferrum ammoniacale.* Martial flowers. *Ens veneris.* This salt is not met with in nature.

P. P. Crystalline grains, of an orange yellow, of a styptic taste, and of a smell nearly similar to that of saffron.

C. P. We doubt whether it is a double salt, or merely a mixture of chloride of iron and of sal ammoniac; whatever it may be, its composition varies according to the degree of heat employed in its preparation and the length of the operation. It is deliquescent, and very soluble in alcohol.

Prep. Take three parts of hydro-chlorate of ammonia, with one part of hydro-chlorate of protoxide of iron, and heat them to a red heat, in a capsule covered over by another inverted capsule. The martial flowers sublime into the latter.

Incomp. Subst. The same as with the preceding article.

Th. E. To fulfil the same indication as the proto-chloride of iron. It is endowed with stimulating properties, but it is seldom used.

D. & M. of Adm. From 2 grs. to 10, in pills, or in solution.——*Tinctura ferri ammoniati*, L. (Hydro-chlorate of iron and ammonia, 1 part; alcohol, 4 parts;) gut. x. to xxx.; two or three times a day.

Tonic Mineral Waters.

We give the name of *Mineral waters* to such as contain in solution one or more foreign substances, in a sufficient quantity to exercise a more or less marked action on the animal economy. These waters are either natural or artificial; the former, prepared by nature, flow from the earth and form springs more or less abundant; the latter, on the contrary, are altogether prepared in our laboratories.

Amongst the natural mineral waters, some are cold, others warm or *thermal.* The remedial properties of these waters vary according to their temperature and to the nature of the active principles predominating in their composition. Thus, some are tonic, others excitant, others again act upon the cutaneous system; finally, there are some which produce alvine evacuations. We shall successively investigate their properties, in the chapters treating of the substances which produce these various medicinal effects.

The waters that possess tonic properties contain generally a pretty large proportion of iron, and have, for this reason, been called *ferruginous*, *martial*, or *chalybeate* waters. This metal is then in the state of peroxide, and is retained in solution by carbonic, and very seldom by sulphuric acid; this is, at least, the most general opinion. However, Mr. Longchamps, according to his numerous observations, is inclined to think that, in most of these waters, the oxide of iron is combined with lime, which enjoys, with respect to this base, the properties of an acid; and that, on this principle, calcareous salt kept in solution would be a *ferrate of lime.* Besides, we find in them, and in various proportions, some carbonic acid, salts of soda, of magnesia, of lime, and even of manganese, &c. The reagents act on them as on all the other solutions of iron.

The greatest number of these waters drank at the springs are limpid, inodorous, of a styptic and metallic taste. Exposed to the action of the air, they are promptly covered with a pellicle exhibiting the colours of the rainbow, and they deposit, after a certain time, some flakes of a yellow ochre, consisting of protoxide of iron.

All the tonic ferruginous waters are cold; the warm possess purgative properties, and moreover they contain but a very small proportion of iron.

The action of these waters on the animal economy is nearly the same as that of all the martial preparations; indeed they are often administered with success in the affections in which the employment of ferruginous substances is indicated. It is princi-

pally in the chronic affections of the abdominal viscera, in chlorosis, in atonic and obstinate mucous discharges, &c. that they are exhibited most successfully. They are commonly administered in various doses, which we shall mention under their respective heads. We shall now give some of the most important and best known of the tonic mineral waters of the United States, England, France, Germany, &c.

[Schooley's Mountain. *Chalybeate Springs.* Schooley's Mountain is a part of the granitic chain, extending in a north-east and south-west direction nearly across the state of New Jersey. Its height is more than six hundred feet from its base, and not more than eleven hundred feet above the level of the ocean. This elevation is sufficient to influence the temperature of these springs. The temperature of the water of the copious springs near the top of the mountain is only 50°, while that of the deepest and coolest wells in New York is 54° Fahr. These mineral springs are situated between two beautiful wooded mountains, and issue from a fissure of the perpendicular side of a rock, and the quantity of water gushing from this fissure may be estimated at six hogsheads per day.

According to Dr. W. J. M'Neven, this water contains extractive, 0.92; muriate of soda, 0.43; muriate of lime, 2.40; muriate of magnesia, 0.50; carbonate of lime, 7.99; sulphate of lime, 0.65; carbonate of magnesia, 0.40; silex, 0.80; carbonated oxide of iron, 2.00; loss, 0.41.

This water has been found advantageous in calculous concretions, and when the urine is blackened by it, is always held as a favourable symptom of its operating beneficially. The quantity generally drank is from ten to twenty half pint tumblers a day. One of the great advantages of this water is, that the carbonic acid it holds is altogether in a state of combination, and to this is generally ascribed its never producing flatulence or spasm in the weakest stomach, while it acts as a tonic like other chalybeates.]

[Pittsburgh Chalybeate Mineral Spring. This spring is situated four miles south-west of the city of Pittsburgh. When the water remains undisturbed for a few hours, it is covered with a white pellicle; its taste is lively and rather pungent, with a peculiar ferruginous flavour, and it exhales an odour of sulphuretted hydrogen gas. Its temperature is very generally uniform, and is of 54° Fahr. The specific gravity of the water differs little from the purest water, and is as 1002 to 1000.

According to Dr. Meade's analysis, it contains muriate of soda,

2; muriate of magnesia, ½; oxide of iron, 1; sulphate of lime, ½; carbonic acid gas in one quart of water, 18 cubic inches.

Dr. M. thinks this water even superior, in a medicinal point of view, to the water of the *Schooley's Mountain* spring, which has long sustained a high character for its chalybeate properties.]

[Yellow Spring. This spring is situated in Green county, (Ohio,) sixty-four miles from Cincinnati. This is a copious vein, which bursts from a fissure in the silicious lime-stone rock; the water is transparent, and emits no air bubbles. Its temperature is of 52°. Its taste is that of a slight chalybeate. From the examinations made, it seems to contain some oxide of iron and carbonate of lime, dissolved by the agency of carbonic acid gas, and slightly charged with saline particles. Its sensible effects on the human body seem to be inconsiderable; it has, however, been used with advantage in cases of chronic debility, in which chalybeates are indicated.]

[Bedford Chalybeate Spring. This fountain rises in a meadow about two miles from Bedford village. The water exhales the peculiar odour of sulphuretted hydrogen gas, and is covered with a thin whitish pellicle. When first drawn from the spring, it is clear and limpid, but on exposure to the action of the air, it becomes turbid. Its taste is ferruginous. From Dr. Church's experiments, it seems to contain carbonic acid, sulphuretted hydrogen, carbonate of iron, with muriate of soda, and a trace of magnesia. See Bedford Mineral Springs.]

[Cheltenham Springs, (England.) The water of these springs, when first drawn, appears tolerably clear, but becomes turbid by standing. It exhales a very slight but perceptible sulphurous odour. To the taste it shows no briskness or pungency, but is brackish, rather bitter, and chalybeate. Its temperature is uniformly from 52° to 53° Fahr. The gaseous, as well as solid or saline contents, vary in each.

The proportion of contents in the strong sulphuretted saline water to the pint is, muriate of soda, 35.0 grains; sulphate of soda, 23.5; sulphate of magnesia, 5.0; sulphate of lime, 1.2; oxide, 0.3; sulphuretted hydrogen, 2.5; cubic inches and carbonic acid, 1.5.

The first effects after drinking these waters are some drowsiness, and sometimes head-ache, but which ceases even previously to the bowels being opened. A moderate dose acts promptly and decisively on the primæ viæ, without however producing any griping, or leaving languor or faintness after its operation.]

[Hartfell Chalybeate Water. Hartfell is situated in Dumfries county, (Scotland.) This water has a strong astringent and inky taste. Its first effects when drunk are giddiness and sickness, especially if a large dose has been drunk. The use of this water sometimes, at first, produces diarrhœa, but most generally induces costiveness. According to Dr. Garnet's analysis, one gallon of this water contains sulphate of iron, 84 grs.; sulphate of alumen, 12; oxide of iron, 15.]

Spa, a small town of the Low Countries, contains seven mineral springs, the principal of which is called Pouhon. These waters, the temperature of which is 10° Centig., (50° of Fahr.,) contain, according to Mr. Jones, in 231 cubic inches of water, carbonic acid, 262 cubic inches; oxide of iron, gr. 5.24; carbonates of lime, 9.87; of magnesia, 1.80; of soda, 2.27; muriate of soda, 1.6; sulphate of soda, 0.99; silica, 2.26; alumine, 0.29.

Spa artificial mineral water, P. Water charged with five times its volume of carbonic acid, 650; subcarbon. of soda, 0.1; ditto of magnesia, 0.2; ditto of iron and muriate of soda, āā. 9.05.

D. & M. of Adm. From three to four glasses a day, increasing by degrees to twelve or fifteen; in injections, lotions, and baths.

Pyrmont, a small town in the circle of Westphalia, contains a great many mineral springs, possessing different properties. The principal one, and the most frequented, is called *Holy Well.* The temperature of its waters are of about 13° Centig. (55½° Fahr.) According to Westrumb, one hundred pounds contain muriate of soda, gr. 122; muriate of magnesia, 134; sulphate of soda, 289; sulphate of magnesia, 547; carbonate of iron, 105.5; carbonate of lime, 348.75; carbonate of magnesia, 339; resinous principles, 9. From this analysis, we see that these waters resemble very much several purgative saline waters, the effects of which they have sometimes produced; but as they act more frequently as tonic, we have thought proper to place them here. The waters of the other springs do not contain iron, and are either saline or simply acidulous.

Artificial Pyrmont Water, P. Water containing five times its volume of carbonic acid, 650; muriate of soda, 0.1; sulphate of magnesia, 0.4; carbonate of magnesia, 0.6; carbonate of iron, 0.05.

D. & M. of Adm. About a quart a day, either pure or mixed with wine or other drinks.

Passy, near Paris, possesses five fountains close to each other, two of which are called *old* and three *new*. These latter possess very active properties, and are more astringent than tonic when

fresh from the spring; but when they have been exposed to the influence of the sun for several months, they deposit the greatest part of the iron they contain in solution, and are then called *purified waters*, which are the most commonly used. With respect to the *old* fountains, their action is scarcely appreciable, and are entirely abandoned. According to Deyeux's analysis, the *new* fountains contain, when just taken from the spring, sulphate of lime, gr. 43; ditto of protoxide of iron, 17.24; ditto of magnesia, 22; ditto of alumen and potassa, 7; muriate of soda, 6.06; carbonate of iron, 0.08; carbonic acid gas, 0.02. After being rested for some time, they contain, sulphate of lime, gr. 44.4; ditto of magnesia, 27.7; ditto of alumen and potassa, 7.6; ditto of protoxide of iron, 1.2; muriate of soda, 6.7.

D. & M. of Adm. *Internally*, when purified, from three to four tumblers full, and even as much as two pints, either the simple water or with wine. The fresh water just from the spring is used *externally* in lotions, shower-bath, injections, &c.

Forges. This place possesses three fountains, *La Reinette*, *La Royale*, and *La Cardinale*. According to Mr. Robert's analysis, a pint of water of the last mentioned spring contains carbonic acid gas, twice its volume; carbonate of lime, gr. three-fourths; ditto of iron, five-sixths; muriate of soda, nine-tenths; ditto of magnesia, one-fifth; sulphate of lime, one-half; ditto of magnesia, nine-tenths; silica, one-sixth. The waters of the two first mentioned fountains contain nearly the same substances, but in smaller proportions.

D. & M. of Adm. As a drink, from one to seven tumblers full a day, either with or without wine.

Rouen. The fountains in this place are three in number. Their temperature is from 50° to 55° Fahr.

According to Dubuc's analysis, a pint of this water contains, carbonic acid gas, one-thirtieth of its volume; carbonate of iron, gr. one; ditto of lime, three-fourths; muriate of lime, three; extractive matter, from one to two.

D. & M. of Adm. As a drink, from four to five tumblers full every morning.

The other principal chalybeate waters are:—In the United States, *Bath*, near Bristol; *Yellow Springs*, Virginia; *Yellow Springs*, near Philadelphia, &c. In France, *Aumale*, *Vichy*, *&c.* In England, *Tunbridge*, *Scarborough*, *&c.*

Tonic Vegetable Substances.

Family Rubiaceæ.

Peruvian Bark. *Cortex peruvianus*, is the name given to the bark of several species of the genus *cinchona*, trees growing in Peru and several other parts of South America.

B. C. Trunk erect; leaves opposite; flowers, in terminal panicles; calix adherent, 5-toothed; corolla monopetalous, 5-parted; 5 stamens, enclosed in the interior of the tube; capsule inferior, elongated, ovoid, bilocular and bivalve; fruit dehiscent, with two cells containing several winged seeds.

The number of the different sorts of bark, at present found in commerce, under the generic name of cinchona is very considerable; and notwithstanding the many and important labours which have been bestowed on this subject, there still exists a great confusion respecting the proper botanical character belonging to each species of this genus. However, we shall divide the cinchonæ into four different species, viz:—

Gray, Loxa, or Crown Bark. *Cascarilla fina.* The bark belonging to this species is principally furnished by the *Cinchona condaminea*, Humboldt, *C. officinalis*, Lin., which grows in Peru, and especially in the province of Loxa.

B. C. Trunk, 15 to 18 feet high; bark chapped, of an ash-gray colour; leaves oval, shining, persistent; the petiole of a pink colour; flowers white or pink, odorous.

P. P. This bark is curled up, of a tubular shape, from eight to ten inches long, sometimes flattened, generally very thin, compact, tolerably fibrous, of an even fracture, slightly odorous, bitter and astringent, but leaving soon after a sweetish impression on the palate. Externally, this bark is rugose, unequal, furnished with a thin epidermis of a gray or bluish colour, with superficial transverse fissures, and covered with different kinds of lichens. The interior surface is smooth, of a yellow or pale red colour. The powder is remarkable for its fallow colour.

C. P. According to Pelletier and Caventou, the Loxa bark contains: 1st, *cinchonia*, (see page 119) united with a peculiar acid, discovered by Vauquelin, and named *kinic;* 2d, a green fatty matter; 3d, a colouring matter, called by Reuss, who discovered it, *cinchonic red;* 4th, some tannin; 5th, a yellow colouring matter; 6th, kinate of lime; 7th, gum; 8th, starch and lignin. Cinchonia enters into its composition in the proportion of $\frac{1}{50}$th.

Yellow Bark. *Calisaya.* Royal yellow bark. This species is furnished by the *Cinchona cordifolia*, Mutis, a very common tree in the province of Calisaya in Peru.

B. C. Trunk, from 20 to 25 feet high; bark of a dark gray; leaves oval, lanceolate, of a violet colour, tomentose underneath; pubescent outside; capsule almost fusiform, one inch long.

P. P. A very compact bark, heavy, more or less rolled, of the size of the finger, covered with a rough and gray epidermis of a thickness proportionate to that of the bark, with slight transversal fissures, its external surface is often partially covered with lichens; this is the *Quill yellow bark, Calisaya arrollenda.* That in flat, but sometimes rolled up pieces of various sizes and forms, and deprived of epidermis, is the *Choice Calisaya bark, Calisaya plancha.* Its fracture is fibrous, shining; its colour, internally, is of a light yellow, becoming deeper when it has been wet; almost void of smell, and of an extremely bitter taste, but without being styptic. The powder is of a lighter yellow than the bark itself.

C. P. The composition of this bark differs from that of the preceding only in one particular, that it contains *quinia* instead of *cinchonia,* (see page 120) in the proportion of $\frac{1}{100}$th, or thereabouts.

The Orange Bark, which is derived from the *Cinchona lancifolia,* Mutis, is now very scarce in commerce, and consequently very seldom used. This bark is thick, in flat or curled up pieces, heavy, compact, hard, covered with a grayish epidermis, rough, with deep fissures, chapped, of a reddish-brown colour internally, of an aromatic smell; of a bitter, aromatic and slightly astringent taste. It has not been analyzed.

Red Bark. The bark which is collected under this denomination, is mostly furnished by the *Cinchona oblongifolia,* Mutis, which abounds in the forests of Santa Fé de Bogotà.

B. C. Trunk, from 80 to 100 feet high; leaves oblong, from 1 to 2 feet long; flowers white, odorous, forming a terminal panicle about 1 foot long; capsules oblong, 1½ inch in length.

P. P. This bark is generally in flat pieces, sometimes curled up, heavy, compact, covered with a rugose epidermis with irregular fissures of a whitish colour on the outside, of a red-brown on the inside. Within is a coat of a resinous appearance, compact, brittle, and of a deep red colour. The lignous part is fibrous, of a rusty red; the powder is one shade darker. This bark has but little smell, its taste is less bitter than that of the others, but very styptic and unpleasant.

C. P. Its composition is nearly similar to that of the preceding species of bark; except that it contains both cinchonia and quinia in the proportion of $\frac{8}{1000}$ths of the former, and of the latter $\frac{17}{1000}$ths.

White Bark. This kind is very scarce in commerce, and should be referred to the *Cinchona ovalifolia*, Mutis, which tree is found in the Andes of Peru, and in New Grenada.

B. C. Trunk, eight or ten feet high; bark grayish, chapped, small branches quadrangular, silky; leaves oval, the superior face shining, the inferior silky; flowers white, small; capsules ovoid, fusiform, one inch long.

P. P. Bark thin, quilled, brittle, covered with a whitish epidermis, fracture fibrous, of a tawny colour internally, of a bitter, nauseating and slightly harsh taste.

C. P. The composition of this kind hardly differs from the preceding.

Such are the principal species of barks admitted by the pharmacologists of our day. There are besides many others, which are found in commerce together with these; but as they are but little known and as little used, we do not think it necessary to describe them here.

Cold and principally boiling water, takes up a portion of the active principles of the various kinds of cinchona; but the decoction becomes turbid on cooling, and is very soon altered. Alcohol is their best solvent.

Incomp. Subst. Concentrated acids, salts of iron, sulphate of zinc, nitrate of silver, deuto-chloride of mercury. The tartrate of antimony and potassa, the infusions of chamomile, Columbo, catechu, rhubarb, &c. produce an abundant precipitate in the infusions and decoctions of several species of bark.

Th. E. Given in small doses, the Peruvian bark acts locally and simply on the stomach and intestinal canal; it increases the vitality of this apparatus, stimulates the digestive functions, and renders the assimilation of the alimentary substances more rapid and perfect; but this tonic action is almost exclusively limited to the tissues with which the bark comes in contact; whilst, under the influence of larger doses we perceive the manifestation of a series of general phenomena, which leaves no doubt that this action is extended to the whole economy. In fact, after the administration of a common dose of bark, under any shape whatever, the mouth becomes dry; the stomach experiences a sensation of heat which extends very soon to the whole abdomen; the circulation is quicker, the pulse becomes more active and full; the general heat, and cutaneous perspiration are increased; finally, a sensation of vigor more or less appreciable and permanent is experienced, which characterizes the tonic medication. Should the dose of bark be too strong, or its use be too long continued, or finally, the digestive canal, or any other organ be in a state of inflammation, all the phenomena we have just mentioned become more intense and all the symptoms of phlegmasia are ag-

gravated. Uneasiness and a dry heat are felt at the epigastric region; nausea, borborygm, vomiting or alvine evacuations take place; a violent thirst and an acrid and burning heat are experienced; the pulse is hard and frequent; the temporal arteries beat violently; all these symptoms are followed by a violent cephalalgia, epistaxis, an extreme agitation, dryness of the skin, and even in some cases, by delirium, sleeplessness, irregular motions, and all the signs of an irritation in the encephalon.

After all we have just said of the immediate effects of the Peruvian bark, it is easily perceived that this substance exercises upon the animal economy, a tonic action of the most energetic character. The intensity of this action varies with the different species of cinchona, and according to the quantity of *cinchonia* and *quinia* they contain; for it is now ascertained, that they owe their tonic properties to both these principles. Finally, several species, the red bark for instance, possess besides, some very decided astringent properties, for which they are indebted to the presence of tannin. Thus, when bark is to be exhibited in substance, in which state it is not now so frequently used as it was formerly, it is proper to choose some particular species in preference to some others, according to the peculiarities of the indications.

One of the most remarkable actions of Peruvian bark, to which it is indebted for a great part of the celebrity it has enjoyed for so long a time, is the action it exercises on intermittent diseases. No one is ignorant, that properly or conveniently administered, it prevents, almost infallibly, the periodical return of the symptoms which characterize these affections. What is the cause of this singular property? does it proceed from the powerfully tonic influence of this substance, as some pretend it does? or will it be admitted that it acts upon the nervous system in a specific manner, as is the opinion of others? In the present state of the science, it is almost impossible to decide this question, and we are of Dr. Barbier's opinion, that we shall not account satisfactorily for the anti-periodic action of the bark, until we are acquainted with the cause of the regular return of these morbid motions, at equal intervals and at regular hours.

The Peruvian bark is administered as a tonic, and principally as a febrifuge. As a tonic, its employment is now considerably limited, notwithstanding its efficacy, in most of the cases in which the administration of strengthening medicines is indicated. It has been prescribed with success in adynamic and gangrenous affections, in typhoid fevers attended with an extreme prostration of strength, in gangrenous angina, passive hæmorrhages accompanied with great debility, &c. It is likewise very useful in gout, chronic rheumatism, scrofula, and scorbutic diseases. In

limited doses, it has proved beneficial in dyspepsia without irritating the stomach, in cases of obstinate and chronic diarrhœa, in old catarrhs, and generally, in all kinds of very old phlegmasiæ, but of a moderate intensity, of the mucous membranes, the continuation of which, seems to be owing to the atony of the tissues, and which yield more easily to the exhibition of tonic remedies than to an antiphlogistic treatment, which, very often, seems to aggravate and render them more obstinate. Externally, it is used in powder or in concentrated decoction, in cases of atonic ulcers, of wounds complicated with hospital gangrene, and of wet gangrene; and exhibited in lotions, injections, gargles, in certain gangrenous or simply chronic angina, in mucous discharges continued by the atony of the membranes; in cases of prolapsus of the rectum, and vagina, &c.

It is principally as a febrifuge that this remedy is most frequently used, and that its exhibition is attended with the happiest consequences. It is administered in larger doses in these cases than in the cases already mentioned. In common intermittent fevers, it is given, in large doses, sometimes before the paroxysm; or else, and this is the best mode of administration, in small doses during the whole continuance of the apyrexia, so as to moderate the intensity of the coming paroxysm, and cause it to disappear gradually. We must always avoid giving this remedy during the fever; for under this circumstance, instead of lessening its intensity, it would increase and render it more obstinate. However, in remittent fevers when the fits are separated by very short intervals, the bark may be exhibited towards the end of the exacerbation, and the dose should be then administered all at once, in order that it may act before the return of the next paroxysm. But before resorting to the employment of this heroic medicine, it is always proper to oppose, by appropriate means, the complications of this disease, which often disappear rapidly under the influence of these remedial means, after a few fits, as it has been frequently observed in the vernal intermittent fevers. In the *pernicious* intermittent fevers, with extreme prostration, and called by the French writers *fièvres larvées*, the violence and severity of which are very great; there must be no hesitation whatever in exhibiting the bark, and giving it at once, in large doses, during the interval of the paroxysms, so as to prevent completely the return of the exacerbation; for in most cases, it is the only means in our power to save the life of the patient; and this means we are happy to say, very seldom fails in its effect, when it is properly and timely administered. It is likewise employed with much advantage in periodical neuralgiæ.

The dose of bark to be administered in a single dose, or in several doses, during the interval of the paroxysms, varies accord-

ing to numerous circumstances, amongst which we will particularly mention, the age, temperament of the patient, and the intensity of the disease. In most cases, it is from two drachms to half an ounce; it may be increased by degrees and be carried, under certain circumstances, as far as one and even two ounces.

The preparations of bark are extremely numerous; the powder was that which was most commonly and successfully used; but it is now generally superseded by the salts of quinia and cinchonia, as we shall mention in the sequel of this work. This powder is generally of a pretty difficult administration on account of its volume, and of its very unpleasant taste; it produces sometimes nausea, vomiting, and alvine evacuations. It will be proper in this case to substitute to it another preparation more appropriate to the state of the stomach of the patient, or else we must unite it with some aromatic substances, or a small quantity of opium; for it has been remarked that when bark produces vomiting, it loses all its febrifuge properties.

D. & M. OF ADM. *Internally.* Powder. As a tonic, gr. x. to ʒss. As a febrifuge, ʒj. to ʒj. and even ʒij. in several doses.——*Infusum Cinchonæ*, U. S., L., E. (Bruised Peruvian bark, ʒj.; water, Oj.)—D. (Peruvian bark, ʒj.; water, f.ʒxii.)——*Infusum Cinchonæ cum aqua calcis*, U. S. (Pulverized Peruvian bark, ʒj.; lime-water, Oj.)——*Infusum Cinchonæ cum magnesia*, U. S. (Peruvian bark, ʒj.; magnesia, ʒj.; cold water, Oj.)——*Decoctum Cinchonæ*, U. S., E. (Pulverized Peruvian bark, ʒj.; water, Ojss.)—L., D. (Bruised Peruvian bark, ʒj.; water, Oj.)—P. (Peruvian bark, 16; sub-carbonate of potassa, 1; water, 500; syrup of bark, 8.)——*Compound decoction of bark*, P. (Loxa bark, 32; senna leaves and sulphate of soda, āā. 8; muriate of ammonia, 1; compound syrup of senna, 32; water, 1000.)——*Tonic mixture*, PARIS H. (Peruvian bark, ʒjss.; simple syrup, ʒj.; water, ʒiv.)

Aqueous extract, P., L., D., POL., PR., DEN., R.——*Alcoholic extract*, L., E., D., P. Doses from gr. x. to ʒj.——*Tonic mixture*, PARIS H. (Extract of bark, 1 part; syrup of tolu and water, āā. 8.)

Tinctura Cinchonæ, U. S. (Bruised Peruvian bark, ʒvj.; diluted alcohol, Oijss.)—L. (Pulv. Peruvian bark, ʒvij.; proof spirit, Oij)—E. (Pulv. bark, ʒiv.; proof spirit, ℔.ijss.)—D., P., R., PR., POL., F., DEN., B. (Pulv. bark, ʒiv.; proof spirit, Oij.) The dose is from ʒss. to ʒiv.——*Dr. Paris's tonic mixture*, (Decoction of bark, ʒiv.; tincture of bark, ʒss.; aromatic confection, ℈j.; aromatic volatile spirit, ʒj.) Dose, a table-spoonful two or three times a day. ——*Tinctura Cinchonæ composita*, or *Huxham's tincture of bark*, U. S., L., E., D., P. (Pulverized bark, ʒij.; orange peel, ʒjss.; serpentaria, ʒiij.; saffron, ʒj.; cochineal, ℈ij. or red sanders, ʒj.; diluted alcohol, U. S. Ojss., L., E., D., f.ʒxx., P. ℔.ij.)——*Tinctura kinæ composita*, PR, (Peruvian bark, 3; gentian root and orange peel, āā. 1; cinnamon water, 8; alcohol, 16.)——*Tinctura kinæ amara*, F. (Peruvian bark, 8; gentian root and orange peel, āā. 3; alcohol, 48.) Dose, from ʒj. to ʒiv.——*Tinctura Cinchona ammoniata*, L. (Pulverized Peruvian bark, ʒiv.; aromatic spirit of ammonia, Oij.) Dose, from ʒss. to ʒij. ——*Tinctura Cinchona ætherea*, P. (Peruvian bark, 32; cascarilla, 8; cinnamon, 6; saffron, 1; Spanish wine and alcohol, āā. 150; sulphuric ether, 3.) Dose ʒss. to ʒj.

Vinum Cinchonæ, P. (Peruvian bark, 1; alcohol, 2; claret wine, 12.) Dose from ʒij. to ʒiv.——*Vinum Cinchonæ compositum*, P. (Peruvian bark, 123; quassia, Winter's bark and bitter oranges, āā. 8; alcohol, 250; wine, 1500.)—— *Vinum amarum*, B. (Peruvian bark, 8; gentian, 4; orange peel, 2; canella alba, 1; alcohol, 32; Spanish wine, 384.)——*Elixir balsamico-stomachicum Hoffmanni*,

Den. (Peruvian bark, orange peel, and sub-carbonate of potassa, āā. 2; extracts of holly-thistle, of small centaury, and of myrrh, āā. 1; Madeira wine, 48.)

Syrupus Cinchonæ, P. (Loxa bark, 64; water, 625; sugar, 250.)——*Syrupus Cinchonæ vinosus*, P. (Loxa bark, 32; extract of bark, 12; Lunel wine, 250; alcohol, 16; sugar, 375.) Dose, ʒss. to ʒij.

Externally. Concentrated decoctions, in lotions, injections, gargles, enema, &c. ——*Antiseptic poultice*, P. (Barley meal, 48; pulverized bark, 8; camphor, 1; water, 125.)——*Ceratrum Cinchonæ*, P. (Simple cerate, 8; alcoholic extract of bark, 1.)——*Antiseptic enema*, Paris H. (Peruvian bark, ʒj. camphor, ʒij.; water, ℔.ij.)

Cinchonia. A vegetable alkaline substance, existing in the loxa and red bark combined with kinic acid, and discovered by Gomez, who gave it the name of *Cinchonin.*

P. P. In very fine prismatic needles, or in white, transparent and crystalline scales, of a bitter taste, which is slowly perceived.

C. P. This substance, composed of carbon, 76.97; nitrogen, 9.02; hydrogen, 6.22; and oxygen, 7.97—according to Pelletier and Dumas, is soluble in alcohol, especially when warm; it is almost insoluble in cold water, and requires 2.500 times its weight of this liquid to dissolve it; ether and volatile oils dissolve it with difficulty. Exposed to the air, it slowly absorbs a small quantity of carbonic acid; heated, it decomposes before melting. It possesses all the properties of the alkalies, it unites with all the acids, and forms with most of them perfect neutral salts.

Prep. Let the pulverized loxa bark be acted upon by warm diluted hydrochloric acid; filter the liquor, and add to it an excess of lime; boil for a short time, filter again, and wash the residuum; then treat it with boiling alcohol, which dissolves the cinchonia only, and from which it is separated by evaporation. Should it contain any colouring matter, as is almost always the case, it must be combined with an acid, and the salt be discoloured by means of animal charcoal, then the vegetable base is separated again by the lime and alcohol.

Th. E. Cinchonia possesses all the tonic and febrifuge properties of the loxa bark, from which it is obtained; but it is almost out of use, on account of its almost complete insolubility.

D. & M. of Adm. In nature, gr. ij. to viij. in pills.

Sulphate of Cinchonia. *Cinchoniæ sulphas.* Neutral salt, produced by the combination of sulphuric acid with cinchonia.

P. P. Four-sided prismatic crystals, very short, and terminated in an acute angle, united in bundles, white, shining, flexible, inodorous, and intensely bitter.

C. P. This salt is composed of cinchonia, 100, and sulphuric acid, 13.021. It is insoluble in ether, soluble in 54 parts of cold water, and in almost any proportion of alcohol. It melts like wax at about 100° Centig., (212° Fahr.) At a higher tempera-

ture it becomes red, and decomposes. By the addition of a small quantity of sulphuric acid, it forms into a bi-sulphate, which dissolves in a little less than its weight of cold water.

Prep. It is obtained in a direct way by combining the base with the sulphuric acid, or else by evaporating and crystallizing the mother waters from which the sulphate of quinia has been extracted. (See page 120.)

Th. E. Dr. Chomel has proved, that this substance enjoys the same properties as the sulphate of quinia, but in a smaller degree; and in order, therefore, to obtain the same effects, a larger dose must be exhibited; this is the reason why it is not so much used. However, Dr. Bally, who has administered this salt with the greatest success, in the dose of from six to eight grains, in several intermittent fevers, prefers it to the sulphate of quinia, inasmuch as it is less irritating.

D. & M. of Adm. In nature, from ij. to xv. grs. in solution or in pills, with a bitter extract.——*Syrup of cinchonia*, F. M. (Sulphate of cinchonia, 3; simple syrup 500; ℥j. to iij.)——*Wine of cinchonia*, F. M. (Sulph. of cinchon. 1; Madeira wine, 1000.) ℥j. to iv., and above, in several doses.——*Alcohol of cinchonia*, F. M. (Sulph. of cinchon. 1; alcohol, 64;) ℥j. to iv.

Quinia. A vegetable and alkaline salifiable base, discovered by Pelletier and Caventou, in the calisaya, red and loxa barks, &c.

P. P. Porous masses, whitish, of a bitter and unpleasant taste. This substance may be however obtained in crystals, composed of very minute needles, forming silky tufts.

C. P. According to Pelletier and Dumas, it is composed of carbon, 75; nitrogen, 8.45; hydrogen, 6.66; oxygen, 10.43. It is almost insoluble in cold water, and soluble in 5000 times its weight of boiling water; it is, on the contrary, very soluble in alcohol and ether. The fixed and volatile oils dissolve a small quantity of it. It is unalterable by exposure to the air. It melts when heated, and decomposes above 100° Centig., (212° Fahr.) Finally, it possesses the alkaline properties, and combines with the acids, to form soluble neutral salts.

Prep. It may be procured directly from the yellow bark by a process similar to that used in the preparation of cinchonia. (See page 119.) But, in general, it is preferable to procure it by the decomposition of the sulphate of quinia, by an excess of magnesia or lime. The precipitate is treated with boiling alcohol, which dissolves the quinia disengaged from its combination; it is afterwards isolated by evaporating the alcohol. It is purified by repeated solutions in this liquid.

Th. E. This substance acts in the same way as cinchonia, but it is not much used except in the state of neutral salt, on account of its insolubility.

D. & M. of Adm. In nature, gr. j. to viij. in pills.

Sulphate of Quinia. *Sulphas quiniæ.* Neutral saline substance resulting from the action of sulphuric acid upon quinia.

P. P. Very minute needles, of a pearly white, flexible, resembling fibrous and silky asbestos, united in radiated flakes, and of an excessive bitter taste.

C. P. This salt, according to Mr. Baup, is composed of quinia, 76.27; sulphuric acid, 8.47; water, 15.25: and when it is effloresced, it is composed of quinia, 86.12; sulphuric acid, 9.57; and water, 4.31. It is soluble in about seven hundred and forty parts of cold, and in thirty of boiling water. It becomes more soluble by the addition of a little sulphuric acid, which causes it to form a bi-sulphate. It dissolves easily in alcohol; in contact with the air, it effloresces rapidly; heated, it melts, and has the appearance of wax, and at 100° Centig. (212° Fahr.) it becomes phosphorescent, principally when rubbed; it is then charged with vitreous electricity. At a higher temperature it is decomposed.

Prep. It is obtained in a direct manner by the process of Henry, jr. which consists in boiling repeatedly the yellow bark in water acidulated with sulphuric acid. The colouring matter is separated by treating the liquor thus obtained with quick lime; then by submitting the precipitate, previously washed in cold water, to the action of alcohol at 36°; this tincture is afterwards evaporated, and the residue boiled in diluted sulphuric acid. Crystals of pure sulphate of quinia are obtained on cooling. From 1 kilogramme, (2 pounds, 3 ounces, 5 drachms, avoirdupois,) of calisaya bark are produced about 12 grammes (3 drachms, 7 grains,) of sulphate of quinia. —

Th. E. The sulphate of quinia possesses the tonic and principally the febrifuge properties of the bark, from which it is obtained. The experiments made a short time after its discovery, by Drs. Double, Villermé, Chomel, &c. and confirmed since by the practitioners of the civilized world, do not leave any doubt respecting its efficacy. The sulphate of quinia is now administered, with the greatest success, in all the cases in which bark in substance was formerly exhibited, (see page 115,) and we do not hesitate in considering the discovery of the active principles of Peruvian bark, as one of the most interesting to the healing art. In fact, the action of quinia, of cinchonia, and especially of their soluble salts, is, in every instance, more certain than that of the bark in substance. On the other hand, they furnish the means of ascertaining precisely the dose of the active substance exhibited, and this knowledge is so much the more important, as the barks introduced in commerce under the generic name of cinchona, vary greatly with respect to their active properties, which, moreover, are extremely difficult, not to say impossible, to ascertain from the most careful inspection. Finally, and this is not one

of their minor advantages, they facilitate the exhibition of this remedy, in a very small volume, by offering its active principle separated from the lignous parts, and from the other almost inert substances, which have no other effect than fatiguing the digestive organs when administered in substance and in large doses, as it was formerly the practice.

D. & M. of Adm. Dose, from one grain to twelve, in solution or in pills.——*Dr. Sedillot's febrifuge pills.* (Sulphate of quinia, gr. xij.; opium, gr. iij.; for 12 pills.) One every hour.——*Syrup of sulphate of quinia,* F. M. (Sulphate of quinia, 1; simple syrup, 138.) Dose, from ℥j. to ℥ij.——*Wine of quinia,* F. M. (Sulphate of quinia, 6; Madeira wine, 1000.) Same doses.——*Tincture of quinia,* F. M. (Sulphate of quinia, 1; alcohol, 100.) From two to four drachms in a mixture.*

Acetate of Quinia has been used in the same cases as the sulphate; but this last is generally preferred, on account of its greater solubility. This salt easily crystallizes in silky needles; its taste is very bitter; it is little soluble in cold, but exceedingly so in boiling water; it precipitates and forms a mass on cooling.

Under the general denomination of cinchona have been comprehended several barks which are not produced by the real cinchona, and which might very properly be called *False cinchona.* In fact, they contain neither cinchonia nor quinia, and cannot consequently be substituted as a febrifuge for the true species of cinchona just described; moreover, they fatigue the digestive organs, and very often produce alvine evacuations, and even vomiting. They are in general very rarely found in commerce, and are not used in France. The principal are:—

1st. St. Domingo or Piton Bark, produced by the *Exostema floribunda,* Persoon, a tree which grows on the mountains of the West Indies. This bark is thin, light, fibrous, rolled, cylindric, of the size of the finger, of a dark gray externally, brown or bluish internally, of a weak and nauseous smell, of a bitter, very acid and unpleasant taste.

2d. The Caribbee or St. Lucia Bark, which is procured from the *Exostema caribæa,* Persoon, a tree growing in the West Indies. This bark is in convex fragments, covered with a yellow epidermis, commonly thin, but sometimes hard and spongy, with deep fissures, of a yellow, red or brown tint internally, of a fibrous texture, offering here and there small, shining, and crystalline points, of a very bitter taste and very faint smell.

* [It is necessary slightly to acidulate with diluted sulphuric acid the menstruum intended to hold in solution the sulphate of quinia, on account of its little solubility.]—Am. Eds.

3d. Cinchona Nueva, obtained from the *Portlandia grandiflora*, Lin., a tree growing at Surinam and Jamaica. Bark, twelve inches long, commonly curled up, smooth and whitish externally, of a pale red internally, of a fibrous texture, of a smell nearly similar to that of tan, of a sweetish, and afterwards astringent and disagreeable taste.

4th. The Bicolour Bark, which has for some time been considerably diffused throughout Italy, and the origin of which is as yet unknown. We are, however, induced to believe that it is produced by an *Exostema*. This bark is curled up in tubes eight or ten inches long, about half a line thick, hard, brittle, smooth, of a yellowish-gray on the outside, of a deep brown in the inside, inodorous, of a bitter taste very analogous to that of angustura.

[Georgia Bark. *Pinckneya pubescens*, Mich., a small tree, native of the southern states, growing in wet and boggy soils.

B. C. This tree is very nearly allied to cinchona, from which it differs more by the habit than by the character of its fruit. The stem is from 15 to 25 feet high; leaves opposite, entire, oval, pointed at both ends, the lower face sub-tomentose; flowers in terminal panicles, composed of four or five flowers; flower rather large, of a bluish colour, marked with purple lines; calix 5-parted, one or two of the segments very large, resembling coloured bractes; corolla long, tubular, border recurved; stamens exserted and inserted near the base of the tube; capsule roundish, opening lengthway with two valves in a contrary direction to the double dissepiment; seeds winged, transversely arranged upon the receptacle.

C. P. Mr. Farr, an able chemist of Philadelphia, had, several years ago, instituted an analysis of this bark, which by unforeseen accidents was not as satisfactory as he would have wished it. He informs us that it contains no quinia, but that he obtained from a decoction of several pounds of this bark a very small quantity of a crystallizable substance, which seemed to have some resemblance to cinchonia. But the quantity obtained was so small, that he, in a great measure, neglected to try it, in order to ascertain its chemical properties, as well as its physiological effects. He thinks, however, that this bark is even inferior to Carthagena bark, to which it is very nearly connected. Georgia bark is used as a substitute for Peruvian bark by the people of Georgia and the Floridas, in doses of ʒj. to ℥ss. It seems not to disagree so much with the stomach as Peruvian bark commonly does.]

Family Hederaceæ.

[Dog-wood. Large-flowered Cornel. *Cornus florida*, Lin., a small tree, native of North America. P. U. The bark.

B. C. Stem from 15 to 35 feet high; leaves about three inches in length, opposite, oval, acuminate and entire; flowers garnished with a large white, seldom rose-coloured, involucrum, composed of four obcordate leaves, having all the appearance and being often mistaken for a corolla; the flowers are aggregate, small, of a greenish-yellow colour; calix monophyllous, 4-toothed; petals, 4; pistils, 4; fruit, an inferior drupe of a crimson colour, not crowned by the calix.

P. P. The bark of the root, stem and branches, taste very much like the *cinchona;* it is bitter, astringent, and slightly aromatic. Its astringency is, however, stronger than that of the Peruvian bark.

C. P. Besides tannin, colouring matter, gum, extractive, &c. this bark contains an alkaline proximate principle, discovered by Mr. G. W. Carpenter of this city, and called by him *cornine*, and afterwards *cornia.*

Th. E. This bark, which has been ably investigated by Dr. Walker of Virginia, is without doubt, one of our most valuable native articles. As a substitute for cinchona, which it resembles very much, both in its physical and chemical, as well as therapeutical properties, much has been written in commending it as a succedaneum. It seems however, to be more particularly related to the *Cinchona oblongifolia;* but the Cornus florida differs from it, in its being rather more astringent. It is extensively employed by country practitioners in intermittent fevers, and the report they give of it is very favourable and satisfactory. Dr. Gregg of Bristol observes, that he exhibited it for nearly twenty-three years, during which time he found it always sufficient to cure successfully intermittent fevers, and uniformly beneficial as a tonic in cases of debility. This bark, in an intermittent fever which prevailed in West Jersey, is said to have proved, generally speaking, even more beneficial than Peruvian bark. However, if this was the case the cinchona employed must have been of a very inferior quality. It is remarked that in its recent state, it is apt to disagree with the stomach and to produce pains in the bowels; but in order to prevent this effect, it is simply needful to add to it, when exhibited, a few drops of laudanum, or to use the bark after it has been collected for some time. This bark may be exhibited with still greater advantage in intermittents, if combined with serpentaria.

An alcoholic extract of the bark of the Cornus florida, resembling that of cinchona, but less bitter and more astringent and containing the cornia, has been prepared by Mr. G. W. Carpenter, and exhibited with success by several practitioners, in the same doses as the alcoholic extract of cinchona.

D. & M. of Adm. The same as with cinchona.

The *Cornus sericea* and *C. circinata*, Lin. Swamp and round-leaved dogwood, seem to possess the same properties as the pre-

ceding, and from the latter a salt somewhat analogous in physical and chemical characters to *cornia*, was obtained by Mr. Carpenter, who states, however, that it is much more astringent and less bitter than that of the Cornus florida.]

[Cornia according to Mr. Carpenter, does not crystallize, but forms, on evaporation, a viscid mass. It is of a pale straw colour, attracts the moisture of the atmosphere, and dissolves in alcohol, and in sulphuric, acetic, and muriatic acids, with which it forms crystallizable neutral salts.

The Sulphate seems to be the only salt of cornia which has been as yet exhibited. It crystallizes in acicular or needle-like crystals, deliquescent, and consequently very soluble in water; of a grayish-white colour, and its taste is intensely bitter.

Dr. Staples obtained it by digesting the bark of the root of the *Cornus florida* in alcohol of 30° of Baumé's areometer. After several days had elapsed, the latter was filtered and concentrated by distillation in a water bath. On cooling, a granular extract was obtained, of a light pink colour, of a very bitter and astringent taste, and weighing one-sixteenth of the bark employed. This extract, when treated with diluted sulphuric acid, afforded a very small quantity of crystals of sulphate of cornia, without having been exhausted of all its bitterness and astringency.

Drs. S. G. Morton, R. Coates, and several other practitioners have exhibited this salt in the same cases in which sulphate of quinia is employed, and with an unequivocal success. Dr. Morton thinks it to be in no respect inferior to quinia, and expects it will prove an efficient substitute for the latter; but considering the excessively small quantity of cornia furnished by the bark of the Cornus florida, we doubt very much if this expectation will ever be fulfilled; at present it seems to be quite neglected by practitioners; however, it deserves farther investigation.]

Quassia. *Quassiæ lignum. Quassia amara*, Lin. *Q. excelsa*, of the American and English pharmacopœiæ. A tree growing in Surinam, Jamaica, and Guyana. P. U. The wood and the bark of the root.

B. C. Leaves scattered, smooth, quino-pinnate, common petiole reddish; folioles sessile, oval, with reddish nerves; flowers red, in multiflore spikes, hermaphrodite, having a bractea at their base; calix small; corolla inserted on a cylindrical hipogynous disk, truncated; ovary globular, with five cells soldered at their summit; fruit, five black drupes, ovoid, distinct, containing a monospermous nut.

P. P. The root of quassia is of the size of the arm, cylindrical, covered with a thin grayish bark, with slight fissures. The wood is found in commerce in large pieces; it is white, inclining to yel-

low, principally when it has been exposed to the air; light and very difficult to reduce to powder. These different parts, and the bark especially, are inodorous, of an extremely bitter taste, without any mixture of acridity or astringency.

C. P. This substance contains a bitter principle called quassin, discovered by Thomson, a small quantity of volatile oil, some gum, lignous fibres, and several salts, with base of lime. Alcohol, and even cold water, take up its active principles.

Quassin is of a brown yellow colour, transparent, uncrystallizable, very soluble in water and diluted alcohol, and insoluble in ether.*

Incomp. Subst. Nitrate of silver, acetate of lead.

Th. E. Quassia is a very energetic tonic, totally devoid of astringency and acidity. It does not at all act as an excitant; for even in large doses it does not accelerate the circulation, nor does it raise the temperature of the animal heat. It strengthens the tissues, promotes the action of the alimentary canal, but without irritating it, or producing, as several other bitters, nausea and alvine evacuations. It is exhibited with advantage in all the cases requiring the employment of tonics, and especially in dyspepsia proceeding from the atony of the digestive organs, in certain cases of gout, in chronic catarrhs and in cases of mucous discharges maintained by the debility of the organs, such as leucorrhœa, blennorrhœa, and diarrhœa unattended with inflammation. It has also been employed with a good deal of success in some kinds of vomiting, purely spasmodic. Finally, it has been recommended as febrifuge, and has in fact been exhibited with success in the United States, and principally at Surinam, in intermittent fevers; but in serious and obstinate intermittent fevers, it cannot be efficaciously substituted for the Peruvian bark.

D. & M. of Adm. Powder, (very seldom) ℈j. to ʒss.—Infusion, ʒj. to water, Oj.——*Infusum quassiæ*, U. S. (Rasped quassia, ʒj.; cold water, Oss.)—L.

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* [Dr. C. Conwell, who considers this substance merely as a concentrated extract, succeeded, after repeated experiments, in obtaining from the quassia an alkaline principle, which he calls *quassa*. The following are the characters he gives to this substance:—it is uncrystallizable; eminently alkaline; precipitates the metallic oxides, neutralizes the acids; turns blue the tincture of alkanet, and constitutes the basis of a class of intensely bitter salts. It is soluble in hot alcohol, and nearly insoluble in cold water. Dr. C. thinks that, in this principle, all the medicinal energy and bitterness of quassia are concentrated.

Prep. Let one pound of powdered quassia, be digested a few days in two quarts of water, with about three drachms of sulphuric acid; after boiling for some time, filtering while hot and subsequently evaporating, until the solution becomes perfectly concentrated, *sulphate of quassa* precipitates, on refrigeration, in snow-white prismatic flocks. This salt is insoluble in any quantity of water, but dissolves easily in an excess of acid. The *hydro-chlorate of quassa* forms starry configurations; the *nitrate* is uncrystallizable, and the *acetate* aggregates in shining plumose fibres.]—Am. Eds.

(Quassia, ℈j.—(E. ʒss.) boiling water, Oss.) Dose, from ʒj. to ʒiij.——*Tonic mixture.* (Infusion of quassia, ʒx.; tincture of columbo, ʒj.; tincture of muriate of iron, gut. x.;) to take at once.——*Infusum quassiæ cum sulphate zinci*, U. S. (Rasped quassia, ʒj.; sulphate of zinc, gr. viij.; cold water, Oss.)——*Tinctura quassiæ*, U. S., D., E. (Quassia, ʒj.; diluted alcohol, Oij.—(E. Oijss.) Dose, from ♏. xx. to lx.——*Extractum quassiæ*, R., Pol., A. Dose, from ℈ss. to ʒss.

Simaruba. *Cortex simarubæ. Quassia simaruba*, Lin. A large tree growing in Guyana, St. Domingo, Jamaica. P. U. The bark of the root.

B. C. Leaves alternate, composed of 10 to 16 alternate folioles; flowers dioicous, small, whitish, disposed in panicles. Male flowers with ten stamens; female flowers ten abortive stamens.

P. P. Bark thin, light, several feet long, curled up, of a fibrous texture, difficult to pulverize, of a grayish colour externally, yellow internally, inodorous, of a bitter taste without any astringency.

C. P. This substance contains according to Mr. Morin's Analysis, 1st, some quassin; 2d, a resinous matter; 3d, a volatile oil, of a smell very similar to that of benzoin; 4th, some malic and a trace of gallic acid; 5th, salts with base of ammonia, potassa and lime; 6th, oxide of iron; 7th, silica; 8th, alumina; and 9th, some lignin. Alcohol and water dissolve its active principles; the infusion is more bitter than the decoction, which gets turbid on cooling.

Incomp. Subst. Alkaline carbonates, corrosive sublimate, acetate of lead, infusions of catechu, galls, yellow bark, &c.

Th. E. The properties of this substance are very similar to those of the preceding article. It is administered with much effect as a tonic, in all the cases similar to those in which quassia is used, and principally in the last stage of dysentery, in certain chronic diarrhœæ, in dyspepsia, &c. It has likewise been recommended as a febrifuge in intermittent fevers, and sometimes with advantage.

D. & M. of Adm. Powder, (very seldom) ℈j. to ʒss. Decoction or infusion, ʒj. to ʒiij. to two pints of water.——*Infusum simarubæ*, L. (Simaruba, ʒj.; boiling water, Oj.) Dose from two to three ounces.

Family Rutaceæ.

Angustura Bark. *Cortex angusturæ. Gallipœa febrifuga*, Aug. Saint-Hilaire. *Cusparia febrifuga*, Humb. and *Bonplandia trifoliata*, Willd. A large tree of South America. P. U. The bark.

B. C. Trunk erect, sixty or eighty feet high, bark grayish; leaves trifoliate, petiole eight or ten inches long, folioles oval, elongated, shining; flowers white, in erect racemes in the axilla of the superior leaves; calix sub-campanulate;

corolla, five petals adherent at their base, five or six stamens, only two of which are fertile; ovary five-celled; fruit, five monospermous capsules, united on a common axis.

P. P. This bark is sold in fragments more or less curled up and even entirely flat, several inches long, by one or two lines thick, covered with a thin and sometimes thick epidermis, white, smooth or slightly uneven. Their internal surface is lamellous, of a yellowish-brown colour, the intermediary substance is of a compact texture, of a deep fallow colour; their fracture is even and resinous, their smell strong, *sui generis*, their taste very bitter, slightly aromatic and persistent.

C. P. The composition of this substance is not well ascertained. We know nevertheless, that it contains neither tannin nor gallic acid, but a very copious bitter principle, a matter containing nitrogen, which, according to Mr. T. Thomson, is analogous to cinchonia, some carbonate of ammonia, and a little essential oil. The remedial principles are soluble in water and alcohol.

Incomp. Subst. Concentrated acids, potassa, infusion of gall-nuts, of yellow bark, sulphates of iron and copper, and corrosive sublimate.

Th. E. The real Angustura bark possesses tonic and stimulating properties. In too large doses, it produces nausea and vomiting; in moderate doses, it stimulates the digestive organs, increases appetite, facilitates digestion, and eventually exercises a tonic action upon the whole economy. It was highly recommended, as a febrifuge, in the beginning of its introduction into the materia medica, and was even considered as superior to Peruvian bark; but from the observations of Dr. Alibert, it has no title to this commendation, nor can it be even substituted for cinchona. However, it is exhibited with success in the atonic affections of the digestive canal, such as serous diarrhœa, dyspepsia, &c. It may be useful in all cases, where the exhibition of corroborants are indicated; but it must not be used whenever any inflammation, either acute or chronic, exists.

D. & M. of Adm. Powder, gr. x. to ℈j.——*Infusum Angusturæ*, U. S.——*I. cusparіæ*, L. (Angustura, ʒij.; boiling water, Oss.) Dose from ʒj. to ʒiij.——*Tonic mixture*, Paris H. (Infusion of Angustura, ʒvj.; cinnamon water, ʒss.; tincture of opium, gut. xx.) A table-spoonful thrice a day.——*Tonic and astringent mixture.* (Infusion of Angustura, ʒj; tincture of catechu, ʒj. pulverized ipecacuanha, gr. x.) For two doses.——*Tinctura Angusturæ*, D. (Angustura, ʒij.; proof spirit, Oij.)—B. (Angustura, 1 part; alcohol, 2 parts.)——*Tinctura Bonplandiæ trifoliatæ*, E. (Angustura, ʒij.; proof spirit, ℔ijss.) Dose, from ʒj. to ij.——*Extractum Angusturæ*, B. Dose, from ℈j. to ʒss.

[Black Alder. Virginian Winter-berry. *Prinos verticillatus*, Lin. A native shrub growing in swamps, on borders of rivulets, and damp woods. P. U. The bark.

B. C. Stem from eight to ten feet high, branched all the way up, leaves deciduous, oval, serrate, acuminate. Flowers, often dioicous, white and small; corolla monopetalous, rotate, six to seven cleft; stamina six; berries globular, becoming in the winter of a fine purplish colour, and containing six nuciform seeds.

Th. E. This bark is astringent, bitter and pungent, and has been employed as a substitute for Peruvian bark in intermittent fevers, and other diseases, both in powder and decoction. It is supposed to be chiefly useful in cases of debility unaccompanied by fever, as a corroborant in anasarca and other dropsical affections, and as a tonic in cases of incipient gangrene. On many occasions, it appears to be more beneficial than the Peruvian bark.]

Family Menispermæ.

Columbo. *Colombæ radix. Menispermum palmatum*, Lam. *Cocculus palmatus*, De Cand. Sarmentose shrub, growing in Africa, in Madagascar, and in the East Indies. P. U. The root.

B. C. Stem climbing, simple, furnished with long hair; leaves orbicular, five-nerved, and five distant and palmated lobes; male flowers, supported by simple or ramose peduncles, longer than the leaves; calix, six-parted; corolla six fleshy petals, six stamens longer than the petals; female flowers unknown.

P. P. This root is thick, fibrous, and composed of fusiform ramifications. It is found in commerce in sections of about one inch and a half diameter, or in pieces two or three inches long, covered with a thick and yellowish bark, easily detached, and offering a rugose epidermis of a brown or olive colour. The parenchyma is of a spongy texture of a greenish-yellow colour, presenting several concentric zones; its taste is bitter, and its smell unpleasant.

C. P. Columbo contains, according to Mr. Planche, starch, 33; gum, 9; a principle containing nitrogen, 6; a yellow bitter matter, 13; a little volatile oil; some salts of lime and potassa; some oxide of iron, silica and lignin. Tincture of iodine colours it a deep blue.* The principles soluble in boiling water constitute about a third of the weight of this root. Alcohol dissolves still a greater quantity of it.

Incomp. Subst. Infusion of gall nuts, of yellow bark, acetate of lead, corrosive sublimate, and lime-water.

* [Dr. Conwell has lately obtained from the Columbo root an alkaline principle, which he calls *Colombia*. He has not been able as yet to obtain this substance, per se, in a crystalline form, but in a white and arid powder of a very bitter taste. The *Sulphate of Colombia* crystallizes in delicate prismatic crystals, and the *hydro-chlorate* in starry points, somewhat deliquescent. He obtained the sulphate by boiling the powdered root with water acidulated with sulphuric acid; filtering while hot, and evaporating, the crystals soon appear in the form of beautiful minute prisms.]—Am. Eds.

Th. E. The action of this substance on the animal economy is very similar to that of quassia; that is, it is a mere bitter without a mixture of astringency or acridity; however, in too large doses, it promotes nausea and vomiting; but, administered in a suitable manner, it strengthens the organs, without acting as a stimulant. It is advantageously exhibited in chronic diarrhœa, in dysentery, atonic diseases of the stomach and of the intestinal canal, and generally in all the cases requiring the use of tonics. In small doses, it is very useful to stop nausea and vomiting, which are so often attendant on the beginning of pregnancy, or are produced by a spasmodic state of the stomach.

D. & M. of Adm. Powder, from gr. x. to ʒss.——*Infusum colombæ*, U. S., E. ——*I. Calumbæ*, L. (Columbo root, ʒj.; boiling water, Oss.)——*Decoctum Colombæ Compositum*, U. S. (Columbo and quassia, āā. ʒij.; orange peel, ʒj.; pulverized rhubarb, ℈j.; carbonate of potassa, ʒss.; water, f.ʒxx.; boil down to a pint, and add tincture of lavender, f.ʒss.)——*Tinctura Colombæ*, U. S., L., E., D. (Columbo, ʒijss.; diluted alcohol, Oijss.) Dose, ʒj. to ʒiij.

The substance which we have just described has become very rare in commerce. It is substituted by another root very similar to it, which Mr. Guibourt calls false Columbo root. It comes from Algiers and the northern coast of Africa, but we do not know what plant furnishes it. It differs from the true Columbo by its fallow gray colour, marked with circular striæ, by its orange yellow colour internally, its bitter and sweetish taste, and its almost insensible odour. On the other hand it contains no starch, and is not coloured by iodine; it imparts a yellow colour to ether. The watery infusion reddens litmus, and sulphate of iron forms with it a blackish-green precipitate. These differences pointed out by Mr. Guibourt, will be sufficient to avoid any error respecting this substance.

Family Gentianeæ.

Gentian. *Gentianæ radix. Gentiana lutea*, Lin., a perennial plant, indigenous to Europe, inhabiting the mountains. It grows abundantly in Auvergne, in the Vosges, the Pyrennees, the Alps, and blossoms in May. P. U. The root.

B. C. Root perpendicular, branched; stem erect, two or three feet high; leaves amplexicaule, oval, of a light green, five or seven nerved; flowers yellow, spicate; corolla regular, rosaceous; stamens alternate with the lobes of the corolla; anthers erect; two stigmas; no styles, ovary and capsule fusiform, unilocular; fruit flat, and membranous on the edges.

P. P. The gentian root is elongated, of the size of the finger, wrinkled, twisted, brown externally, of a lively yellow, and spongy texture internally, of a slightly nauseous smell, of a very bitter taste, but devoid of astringency.

C. P. According to Henry and Caventou, it contains a peculiar bitter principle, which they have called *Gentianin*, an oleo-

resinous matter, very similar to bird-lime, a greenish oil, uncrystallizable sugar, some gum, a yellow colouring matter, and finally some lignin. Water, alcohol, and ether, dissolve the active parts of this root.

INCOMP. SUBST. Acetate of lead, sulphate of iron, &c.

TH. E. Gentian is, unquestionably, the most powerful, and most used of all the bitters, indigenous to Europe, contained in the materia medica. Like the preceding substance, it exercises upon the economy a tonic action merely. However, the volatile and odorous principle which the green plant contains, and of which but an inconsiderable quantity is to be found when desiccated, seem to act on the nervous system, and causes, according to Planche, nausea, vomiting, and a pretty long inebriation. It is administered very often and successfully in all the cases requiring the exhibition of tonic remedies, and especially in dyspepsia, serous diarrhœa, maintained by the atony of the digestive organs. It is likewise successful in some cases of chronic inflammation of the mucous membrane of the intestines, when this alteration is produced by the debility of the tissues. It is daily administered in scrofulous affections, in some cases of gout, jaundice caused by the state of debility of the biliary apparatus, in chlorosis, hysteria, &c. It is given alone or united with other tonic and astringent substances, in intermittent fevers, and it is said to have proved very efficacious. But it is far from presenting the same certainty of success as the Peruvian bark or its active principles.

D. & M. OF ADM. Powder, ℈j. to ʒss.——*Infusum gentianæ compositum*, U. S., E. (Gentian root, ʒss.; orange peel, ʒj.; coriander (U. S. ʒss.) (E. ʒj.) Diluted alcohol, ʒiv.; water Oj.)—L. (Gentian root, orange peel, āā. ʒj.; fresh lemon peel, ʒij.; boiling water, f.ʒxii.)—D. (Gentian root, ʒij.; fresh lemon peel, ʒss.; orange peel, ʒjss.; proof spirit, f.ʒiv.; boiling water, f.ʒxij.) Dose, ʒj. to ʒij. two or three times a day.——*Extractum gentianæ*, gr. xij. to xxx.——*Tinctura gentianæ*, P., PR., POL., B. (Gentiana, 5; alcohol, 24.) Dose from ʒj. to ʒij.——*Tinctura gentianæ composita*, U. S., L., D. (Gentian root, ʒij.; orange peel, ʒj.; cardamom seeds, ʒss.; diluted alcohol, Oij.)—E. (Gentian root, ʒij.; orange peel, ʒj.; canella alba, ʒss.; cochineal, ʒss.; proof spirit, Oijss.)——*Tinctura amara composita*, B. (The same as the preceding.)——*Tinctura amara*, PR., POL. (Gentian root, bitter oranges, flowers of small centuary, āā. 2 parts; zedoary, 1 part; alcohol, 36 parts.)—A. (Extracts of gentian and of wormwood, āā. 4 parts; tincture of orange peel, 8; carbonate of potassa, 1; cinnamon water, 96; alcohol, 24.) ʒj. to ij.——*Tinctura gentianæ ammoniacalis*, P.——*Elixirium ad scrophulas.* (Gentian root, 4; carbonate of ammonia, 1; alcohol, 125.)—Peyrilhe's elixir differs from the preceding only in this particular, that the carbonate of ammonia is substituted by half its quantity of sub-carbonate of potassa.

Vinum gentianæ compositum, U. S., E. (Gentian root, ʒss.; Peruvian bark, ʒj.; orange peel, ʒij.; canella alba, ʒj.; diluted alcohol, f.ʒiv.; Spanish wine, Oijss.)—B. (Gentian, 16; orange peel, 12; black pepper, 1; ginger, 2; Spanish wine, 192.) Dose, ʒiv. to ʒj.——*Anti-scrofulous mixture*, PARIS H. (Tincture of gentian, ʒj.; carbonate of ammonia or soda, ʒss.) Dose, ½ or ⅓ of this quantity.

Several other species of gentian, such as *Gentiana purpurea* and *G. punctata*, Lin. possess likewise a great degree of bitterness, and are used, in the north of Europe, as substitutes for that which we have just described, and with which they are indeed very often mixed. The *Gentiana acaulis*, Lin. and several other small species growing on the Alps, contain according to Messrs. Guillemin and Jacquemin, a much larger proportion of gentianin than the officinal gentian, and might be advantageously substituted for it; but their roots are so small, that they are not thought worthy of being introduced into commerce.

Gentianin. *Gentianinum;* the active principle of gentian, discovered by Henry and Caventou.*

P. P. Small needles of a yellow colour, inodorous, of an excessively bitter taste.

C. P. This substance is neither alkaline nor acid; it is not very soluble in cold, but more so in boiling water, and dissolves very readily in alcohol, ether, and in the acids which weaken its colour and render its bitterness more intense. Exposed to a temperature of about 350° Centig. (662° Fahr.) it is partly decomposed, and partly volatilized in fine yellow fumes, which condense under the form of small crystalline needles.

Prep. Treat the gentian root with ether; filter the liquor; evaporate the ether, and wash repeatedly the dregs with diluted alcohol; then evaporate again. Dilute the residue with water, add a small quantity of well washed magnesia; boil the whole and evaporate in a water bath; finally, dissolve again in ether, in order to separate the magnesia and thus the gentianin will be obtained in all its purity.

Th. E. According to Dr. Magendie's experiments, this principle is in no way venomous; it acts on the economy in the same manner as the substance which furnishes it; this action however is more energetic. It may be used with advantage in the same cases as gentian.

D. & M. of Adm. In substance, gr. ij. to iv. in pills.——*Tincture*, F. M. (Gentianin, 0.25; alcohol, 32.) ʒi. to iv.——*Syrup*, F. M. (Gentianin, 0.8; simple syrup, 500;) ℥j. to ij.

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* [By treating gentian by the same process he had used with quassia and columbo, Dr. Conwell obtained from that root an organic alkali, called by him *Gentia*, which crystallizes in small needle-form, efflorescent fibres, inodorous and bitter, possessing, with little variation, all the characters and properties of colombia.

From experiments subsequently made by Dr. C., it appears that this substance has a great analogy with piperin, and like it, is indebted for its activity to a peculiar oil, which is separated from gentian by repeated crystallizations.]—Am. Eds.

Family Gentianeæ.

[American Columbo. Wild Columbo. *Frasera Walteri*, Mich. *F. Caroliniensis*, Walter. A beautiful triennial plant, growing principally in the western parts of the union, in dry and open woods. P. U. The root.

B. C. Stem from 5 to 10 feet high, cylindrical, erect, smooth, with few branches except at the top, where they form a part of the pyramidal inflorescence; leaves all verticillate, sessile, entire, with a single nerve; flowers yellowish-white, numerous, large, forming an elegant pyramidal panicle, from one to five feet long; calix deeply 4-parted, spreading, nearly as long as the corolla, which is also 4-parted and spreading as the calix; segments oval, with a bearded orbicular gland in the middle of each; four stamina, with short subulated filaments; anthers oval-oblong; capsule yellowish, compressed, partly marginated, one-celled, seeds from 8 to 12, imbricated, elliptic, with a membranaceous margin.

P. P. Root large and tuberous, of a yellow colour, of a sweetish bitter taste, imported in the market from Marietta, in the state of Ohio, in pieces resembling those of columbo in appearance, having a thick yellow bark, and a yellowish spongy wood.

Th. E. The root of the *Frasera Walteri* is a pure, powerful and excellent bitter, destitute of aroma. It is said to be not inferior to gentian and columbo, and equal to any of the common tonic bitters used in medicine. In its recent state it seems to possess considerable emetic and cathartic powers. It is extensively used in the western states, and seems to support, generally, its reputation wherever it is resorted to. It is used as gentian or columbo in powder, decoction, infusion or tincture.]

[Blue Gentian. *Gentiana Catesbæi*, Walter. *G. saponaria*, Willd. A perennial plant, growing principally in the southern states, in open grassy swamps. P. U. The root.

B. C. Stem terete, minutely pubescent, and somewhat scabrous; leaves short, elliptic-ovate, acute, margin scabrous; flowers terminal, fasciculate; corolla five-cleft, of a fine blue colour, campanulate, somewhat ventricose; segments subacute, interior plaits lacerately toothed.

P. P. Roots branching and fleshy; when dried, it has at first a mucilaginous and sweetish taste, which is soon followed by an intense bitter, very nearly approaching that of officinal gentian.

C. P. According to Professor Bigelow, it contains an extractive bitter principle, soluble both in water and alcohol, resin, &c.

Th. E. The blue gentian is a tonic bitter, very little inferior to the *Gentiana lutea*. It is used in the southern states in complaints arising from indigestion and debility of the stomach. Its tincture is esteemed as a remedy in dyspepsia, given in doses of from ʒij. to ℥j.; it is said to increase appetite and prevent the acidification of food. Dr. Elliott states, that it is employed in

the south, in the form of a decoction, in cases of pneumonia, accompanied with nervous fever, and that its action is of a tonic and sudorific nature.]

Chiretta or Chirayta. *Gentiana Chirayta*, Roxburgh. *Henricea pharmacearcha*, Lemaire-lizancourt. A perennial plant, growing in Hindostan and Bengal. P. U. The stem and root.

B. C. Stem woody, branched at top, from 2 to 5 feet high; leaves opposite; flowers yellow, terminal, in dichotomous or trichotomous panicles at the extremity of the branches.

P. P. Woody fragments, yellowish, of the size of a quill, offering a pretty large medullary canal, inodorous, and of an excessively bitter taste.

C. P. The substance contains, according to Boissel and Lassaigne, a resin, a bitter substance of a deep yellow colour, a yellow colouring matter, some gum, malic acid, salts of potassa, of lime, and a small quantity of oxide of iron. Water and alcohol dissolve its active principles.

Th. E. The chiretta is very much employed in Hindostan as a tonic, in intermittent fevers, in atonic diseases of the digestive canal, in gout, &c. The English practitioners consider it as possessing very decided tonic properties, and prescribe it in cases requiring the exhibition of corroborant remedies. It is but little used in France, on account of its scarcity.

D. & M. of Adm. *Powder*, gr. xij. to ℈j. *Decoction or infusion*, ℥ss. to ℔j. of water.

Small Centaury. *Centaurii minoris summitates. Chironia centaurium*, Lamarck. *Erythræa centaurium*, Richard. Annual plant, indigenous to Europe, growing abundantly every where; it blossoms in the months of July and August. P. U. The flowered tops.

B. C. Stem herbaceous, somewhat quadrangular, about a foot high; leaves oval, acute, sessile; flowers corymbose at the summit of the stem; calix cylindrical, 5-parted; corolla infundibuliform with five deep divisions; anthers rolled in spirals; one bifurcate style furnished with two stigmas; ovary elongated, unilocular and polyspermous; fruit, a bivalve and unilocular capsule.

P. P. This plant is inodorous and of a bitter taste when green, but still more intensely so when dry.

C. P. The flowered summits of the small centaury contain, according to Dr. Moretti, a free acid, a mucous substance, a bitter extractive matter, and several salts. Water and alcohol deprive them completely of their active principles.

Th. E. Small centaury is one of the most esteemed of the bitters indigenous to Europe, and one of the most commonly

employed. Its action upon the economy is very analogous to that of gentian, and of the other merely bitter substances. It is administered in all the cases which require the employment of tonics; but it has been principally recommended in intermittent fevers, and indeed it succeeds perfectly well, when these diseases are not very stubborn, as are those which make their appearance in the spring; but it cannot be used as a substitute for the Peruvian bark in the pernicious intermittent fevers, nor in those which take place during the fall, in certain localities. It is likewise administered in gout, chlorosis, and other diseases, maintained by the atony of the organs.

D. & M. of Adm. Powder, ʒss. to ʒj. Decoction or infusion, ʒiv. to vi. to ℔ij. of water.——*Distilled water* of small centaury, P. ʒj. to iv.——*Extr. centaurii minoris*, P., Pol., R., A., Den., Pr., B. ℈j. to ʒj.——*Essentia* seu *Tinct. centaurii minoris*, Den. (Small centaury, 1; alcohol, 4;) ʒj. to vj.

[American Centaury. *Chironia angularis*, Willd. *Sabbatia angularis*, Adanson. An annual plant very nearly related to *Chironia centaurium*, and extensively distributed throughout the United States. P. U. The whole plant.

B. C. Stem herbaceous, four-sided, with membranous wings at the angles, from one foot to eighteen inches high; leaves opposite, ovate, acute, closely sessile, or nearly amplexicaule, three-nerved; flowers numerous, terminal, from two to five at the extremities, of a beautiful rose-red colour above, much paler and nearly white underneath; in the centre of the corolla, there is a defined pentangular star of a rich yellow colour, bordered with green; corolla rotate, from five to twelve-parted; anthers at length revolute, of a rich yellow colour; capsule, one-celled, two-valved, many-seeded.

P. P. As all the *gentianeæ*, the whole plant is of an intense bitterness, which property is communicated both to alcohol and water; it is entirely devoid of astringency. The root is composed of yellowish and hard fibres, has a slight aromatic smell, and does not tire the digestive organs.

Th. E. This plant is a pure bitter, justly held in estimation as a valuable tonic and febrifuge. It has been generally administered in febrile diseases throughout the United States, and employed by the American practitioners in preference to the small centaury, and also much used in domestic practice as a prophylactic against autumnal fevers. It is used in strong infusion in large and repeated doses.]

Family Aloideæ.

[Mealy-star-wort. Star-grass. *Aletris farinosa*, Lin. A perennial plant, exclusively growing in North America, in dry and poor soils. P. U. The root.

B. C. Stem from twelve to twenty-four inches, very simple and upright, nearly naked; leaves radical, disposed on the ground in a stellate rosette, lanceolate, mucronate and membranaceous; flowers covered with a whitish mealy substance, on a slender spike; perigone simple, corolliform, tubular, persistent, six-cleft; stamina six, inserted at the base of the segments; germ oblong; style triquetrous; capsule three-celled, many-seeded.

P. P. Root premorse, ramose, black outside, brown inside, intensely bitter.

C. P. It appears to be highly resinous, and contains extractive, but very little or no tannin or gallic acid.

Th. E. According to Professor Bigelow, no plant surpasses the *Aletris farinosa* in genuine, intense and permanent bitterness; neither aloes, gentian, nor quassia, exceeds it in the impression produced on the tongue. The root is highly valued as a tonic and stomachic in loss of appetite, weakness of the stomach, and indigestion; but it is said to produce nausea, when taken in large doses. In the southern states, it has acquired a considerable repute as a remedy in dropsical affections. This plant deserves the attention of practitioners; it is common and well known by the country people, and might be easily procured by druggists.]

Marsh-trefoil. Buckbean. *Herba trifolii fibrini. Menyanthes trifoliata*, Lin. A perennial plant, common both to Europe and America, growing in marshy places, and flowering in April and May. P. U. The stems and leaves.

B. C. Stem herbaceous, branched, horizontal, articulate, of the size of the finger; leaves composed of three oval leaflets, supported by a long petiole; flowers white, somewhat pink, in a short spike, carried on a common peduncle; calix persistent, 5-parted; corolla monopetalous, borders ciliate; 3 stamens; 1 style; 2 stigmas; capsule ovoid, polyspermous, unilocular.

P. P. The stem and leaves of the fresh plant are of a deep green colour, smooth, of a faint and unpleasant odour, of a very bitter and slightly nauseating taste.

C. P. The expressed juice contains, according to Mr. Tromsdorff, a very bitter extractive substance containing nitrogen, a brown gum, some inulin, a green fecula, some malate and acetate of potassa, and about seventy-five per cent. of its weight of water. The active principles are very soluble in water or alcohol.

Th. E. Marsh trefoil possesses energetic tonic properties; but administered in too large doses, it very often produces nausea, vomiting, colics, and alvine evacuations. This is an indication of its irritating effects on the stomach and intestinal canal. In moderate doses, it is successfully exhibited in the atonic affections of the digestive canal, in scurvy, chronic rheumatism, gout, &c. It is daily administered in the diseases of the skin. It has been highly recommended as febrifuge, but it does not possess more valuable properties, in this respect, than the other bitter substances, which,

to our knowledge, will perfectly cure the slight vernal intermittent fevers, but which almost constantly fail in those of the fall, which are more obstinate, and yield with greater difficulty. Finally, it is recommended as an emmenagogue, and succeeds in the cases where the suppression of the menses is owing to the atony of the organs.

D. & M. of Adm. In powder, (seldom,) ℈j. to ʒj. Decoction and infusion, ʒj. to Hbij. of water. Expressed juice from the fresh plant, ʒj. to ʒiv.——*Extractum trifolii aquatici*, A., Pr., F., Pol., Den., B., ℈j. to ʒj.

Family Synantherеæ.

Section Cynarocephalæ.

Burdock. *Bardanæ seu lappæ majoris radix. Arctium lappa*, Lin., a plant indigenous to Europe, and naturalized in America. It is biennial, very common in uncultivated ground, and amongst rubbish; it flowers in the summer. P. U. The root, and sometimes the leaves. In England the seeds are likewise employed.

B. C. Stem branched, from four to six feet high, reddish; leaves cordiform, very large, tomentose, waved on the edges, and supported by a long canaliculate petiole, flowers violet, flosculous, all fertile, at the extremity of the branches; involucre roundish, formed of numerous small imbricated leaflets, hooked inside; fruit quadrilateral, supporting a sessile pappus.

P. P. The root of this plant is of the size of the finger, sometimes much larger, spongy, fusiform, blackish outwardly, white internally, inodorous, of a sweetish and slightly astringent taste; the seeds are aromatic, bitter and acrid.

C. P. The root contains a large quantity of inulin, (see page 140,) a bitter extractive matter, some salts, with base of potassa. The leaves contain a good deal of sub-carbonate of potassa, some nitrate of potassa, and some other salts. Water dissolves its active principles.

Th. E. This substance, although it possesses a bitter taste, has but slight tonic properties. Nevertheless it seems to act as a tonic on the animal economy; but its effects are generally not very decided. However, it is commonly recommended as a diaphoretic and a diuretic; indeed, when properly administered, it often acts in both these capacities. It is daily given in the treatment of the diseases of the skin, especially when this membrane is dry and rough. It is recommended in gouty, rheumatic, and syphilitic affections, without affording any certainty of success. The burdock seeds are used in England as a sudorific, but their employment is very seldom resorted to in this country. The bruised leaves, applied to obstinate atonic ulcers, to crusta lactea, &c. excite the skin powerfully, and very often produce some good effects.

D. & M. of Adm. Powder, (seldom,) ℈j. to ʒss. Decoction, ʒj. to ij. to ℔ij. of water.

Holy Thistle. *Cardui benedicti* vel *Santi herba, Centaurea benedicta*, Lin. An annual plant, native of Europe, and naturalized in America. P. U. The leaves and flowers.

B. C. Stem herbaceous, branched, quadrangular, reddish, hairy; leaves alternate, deeply and irregularly dentate, each tooth terminated by a prickle; flowers capitulate, solitary, terminal, yellow, containing from twenty to twenty-three hermaphrodite and fertile florets, except those of the disk; involucre, conical, and composed of imbricated scales; fruit smooth, supporting a double pappus.

P. P. This almost inodorous plant is intensely bitter, but its taste does not last.

C. P. It contains, according to Stallman, resinous chlorophyle, 4.5; bitter principle, 15.5; gum, 8.3; and several salts with base of potassa and lime. Water and alcohol dissolve its active principles.

Incomp. Subst. Nitrate of silver and acetate of lead.

Th. E. The holy thistle is endowed with positive tonic properties; however, administered in large doses, especially in a strong decoction, it produces vomiting, and it is frequently used in this manner in order to facilitate the action of emetics. It is most commonly used as a gentle tonic in dyspepsia, chronic diarrhœa, and generally in atonic affections. It has frequently been administered as a febrifuge, and it is said to have been very successful. It has been recommended in arthritic affections, in some cases of pleurisy and chronic peripneumonia. Finally, anthelmintic properties have been ascribed to it, to which it has no particular claim.

D. & M. of Adm. Powder, ℈j. to ʒj. Infus. from ʒss. to ʒij. to ℔ij. of water. Decoct. (Seldom) from ʒss. to ʒj., to ℔ij. of water, by small cupful.——*Distilled water*, P. ʒj. to ʒij. *Extract*, P.—*Extractum cardui benedicti*, Pr., R., F., Pol., Den., ʒss. to ʒj.——*Wine*, (Holy thistle, ʒj.; red wine, ℔ij.) ʒj. to ʒij.

The Star Thistle,	*Centaurea calcitrapa.*
Greater Centaury,	*Centaurea centaurium.*
St. Barnaby's Thistle,	*Centaurea jacea.*
Corn Flower,	*Centaurea cyanus.*
St. Mary's Thistle,	*Carduus marianus*, &c.

Are now but very seldom used.

Family Synantherеæ.

Section Corymbiferæ.

[Thorough-wort. Boneset. Indian-sage. *Eupatorium perfoliatum*, Lin. A perennial indigenous plant, very common in meadows, damp woods, and on the margin of waters. P. U. The whole plant, and especially the leaves.

B. C. Stems erect, from two to four feet high, very hairy and branched at top. Leaves perfoliate, broadest at their base, or point of union with the stem, tapering gradually in a long acumination, serrate, rugose, closely beset with gray hair, the upper pairs of leaves of the stem and all those of the branches are there merely sessile. Flowers terminal, white, supported by short and hairy peduncles, in close fastigiate corymbs. Calix imbricate; florets from twelve to fourteen. Anthers deep blue or black. Seeds prismatic, attenuate at the base and of a crow-black colour.

P. P. The whole plant is exceedingly bitter, and possesses but little smell.

C. P. According to Dr. Andrew Anderson, this plant contains a free acid, a small quantity of tannin, a bitter extractive matter, a gummy matter, resin, nitrogen, lime, probably in the state of acetate, gallic acid, a resiniform matter, soluble in water and alcohol, containing a bitter principle.

Mr. J. Scattergood has obtained from this plant, a salifiable base, which forms with sulphuric acid, tasteless, prismatic crystals, and which he calls *Eupatoria.**

Th. E. This plant possesses active remedial properties, and acts powerfully as a tonic, sudorific, and an emetic, according to the doses in which it is administered. It has been exhibited with success in intermittent and other fevers, either in infusion, decoction, or in powder. The leaves are the part principally endowed with medicinal properties. Dr. Anderson states, that this remedy was used in nearly every case of intermittent that occurred in the New York Alms-house in 1812, instead of the Peruvian bark, and that it uniformly proved successful. Drs. Bard and Hosack speak very highly of its usefulness as a diaphoretic in yellow fever. It increases but very slightly the circulation, and may therefore be employed with advantage in every variety of inflammatory affection. Dr. Barton has seen it succeed in obstinate cutaneous diseases. Administered as a tonic in the form of a cold infusion, it very speedily restores the tone of the stomach. Dr. Bigelow adds also his testimony in favour of its good effects as a tonic, in loss of appetite and other dyspeptic symptoms, as well as in general debility, and says he found it particularly useful in very old people labouring under indigestion. It is said to possess also some diuretic properties.

* [Mr. Righini discovered a few years ago, in the *Eupatorium cannabium*, Lin., a plant very common in Europe, a new alkali, which he called Eupatorin, *Eupatoria*, and he considers it to be the active principle of this plant. This substance is obtained in the form of a white powder; has a taste *sui generis*, is insoluble in water, soluble in sulphuric ether and diluted alcohol. It swells when thrown on the fire and burns; combines with sulphuric acid and crystallizes in needles. Mr. R. has obtained eupatoria in too small quantities to try its medicinal properties. *See the North American Medical and Surgical Journal.*]—Am. Eds.

Doses. Powder, from ten to twenty grains as a tonic or diaphoretic. Infusion, ʒij. to ʒss. to a quart of boiling water, in doses of ʒij. to ʒiv. every three or four hours.]

[Wild Horehound. *Eupatorium pilosum*, Walt. *E. teucrifolium*, Willd., a native annual plant, growing in swamps and low woods, possesses the same properties as the preceding article, and is exhibited to fulfil the same indications. It is principally used in the southern states, where it has acquired a considerable repute as a domestic remedy in the prevalent fevers of that climate. George Jones, Esq. President of the Georgia Medical Society, states that it serves as an excellent substitute for cinchona. Indeed, among the planters on or near the sea shores, it supersedes the use of bark in the cure of fevers. Dr. Coxe says that it is a tonic, diaphoretic, diuretic, and mildly cathartic, which does not oppress the stomach as the Peruvian bark is apt to do. Hence, it may often be administered where the cinchona is inadmissible. It is usually exhibited in the form of infusion, (one ounce of the dry leaves to a quart of water,) and taken daily in doses of from two to four ounces every hour or two. It may be advantageously combined with Peruvian bark; and although it may sometimes fail of producing the desired effect, it well deserves a station among the articles of the materia medica.]

[The Ayapana, *Eupatorium ayapana*, Ventenat, a Brazilian plant, possessing the same medicinal characters as the preceding, with a bitter and aromatic taste and an agreeable odour, was formerly considered as one of the most efficacious medicines in a great number of diseases; but it is now no longer used.]

Elecampane. *Radix enulæ campanæ. Inula helenium*, Lin. A perennial plant, native of Europe, and now very common in this country, growing in low meadows and flowering in July and August. P. U. The root.

B. C. Stem cylindrical, from four to six feet high, branched towards its summit, covered with a whitish down; radical leaves oval, acute, tomentose underneath, irregularly dentate and petiolate. The caulinary small, sessile and almost round; flowers yellow, at the extremity of the branches. The florets of the circumference are female; involucre formed of imbricate leaflets; seeds elongate, cylindrical, surmounted by a silky and sessile pappus.

P. P. The elecampane root is large, tuberous, elongated, brown externally, white internally, of an aromatic smell, of a very bitter taste at first, and afterwards sharp and camphorated.

C. P. It contains 36.7 of a peculiar principle discovered by Rose, and called *Inulin* by Thomson; white, pulverulent, soluble in boiling water, from which it precipitates on cooling, and finally, which is considered as starch; 0.3 of a concrete volatile

oil, very analogous to camphor; 0.6 of wax; 1.7 of acrid resin; 36.7 of a bitter extractive matter; 4.5 of gum, and finally some lignous parts, albumen and salts with a base of potassa, lime and magnesia. Water and alcohol dissolve all its active principles.

Th. E. This plant is endowed with pretty energetic tonic properties, and besides it acts likewise as an excitant, on account of the camphorated volatile oil which it contains. It is recommended in indigestion, when it proceeds from the debility of the organs, in some cases of humid cough, attended with great expectoration, but without fever nor heat of the skin; in the last period of pulmonary catarrhs, when irritation has subsided; in chronic catarrhs of the bladder and urinary passage, in serous and obstinate diarrhœa. Some ascribe to it diuretic and diaphoretic properties; and indeed, given in a lukewarm infusion, in small and repeated doses, it may act in this way, and be serviceable in the cases where it is necessary to promote perspiration and the urinary secretions, without however, weakening the organs. It has been exhibited as an emmenagogue and an anthelmintic; but with respect to both these properties it has no more peculiar claim, than any other bitter. It has been used with some advantage externally in psora.

D. & M. of Adm. Powder, ʒss. to j. Decoction or infusion, ʒss. to j. to ℔ij. of water.——*Compound decoction of elecampane*, Paris H. (Elecampane, ʒj.; hysop, and ground ivy, āā. ʒij.; water, ℔ij.; syrup of honey, ʒij.; nitr. of potassa, ʒss.) Dose, from ʒj. to ij. every hour.——*Compound elecampane mixture*, Paris H. (Decoction of elecampane, ʒiv.; tincture of digitalis, ʒss.; alcohol of potassa, gut. xviij.; aperient syrup, ʒj.) By spoonfuls.——*Extractum helenii*, P., Pol., B., Pr., A. from ϑj. to ʒj.——*Tinctura enulæ*, P., A. ʒj. to ʒij.——*Vinum enulæ*, P. (Elecampane, ʒi.; red wine, ℔ij.) ʒij. to ʒiv.

Coltsfoot. *Tussilaginis herba, flores. Tussilago farfara*, Lin. A plant indigenous to Europe, perennial, very common in a clay soil; flowering in the beginning of the spring; it has a bitter and mucilaginous savour. It is used as an infusion in the dose of a handful to two pounds of water, in slight pulmonary catarrhs and some other affections of a mild character. Its action, although very weak, can be referred to its tonic effects.

Family Synantherеæ.

Section Cichoraceæ.

Wild Succory. *Cichorii herba, radix. Cichorium intybus*, Lin. A perennial plant growing abundantly on the road side. P. U. The leaves and roots.

B. C. Stem herbaceous, erect, branched; radical leaves, elongate, obtuse; flowers of a light blue colour, disposed in thin spikes; involucre double, the exterior one formed of five elongate leaflets, the interior, eight divided; fruit truncated, furnish with a fringed edge.

P. P. The root of this plant is oblong, of the size of the finger, fusiform, reddish externally, white internally, and inodorous. This part, as well as the leaves, have a bitter taste. The green plant furnishes a whitish and milky juice of a remarkable bitterness.

C. P. It seems to contain some nitrate and sulphate of potassa, a muriate, and an extractive bitter principle.

Incomp. Subst. The infusion of gall nuts, the salts of iron, of lead, &c.

Th. E. The wild succory has a tonic action, for which it is indebted to its bitterness. This action, although slow and weak, becomes, however, evident after a certain time. It is daily employed in cases of debility of the gastric organs and in many other affections requiring the use of corroborants. It has been for a long time considered as a dissolvent and aperient, and has been recommended as such in obstruction of the liver and abdominal viscera, in jaundice, diseases of the skin, &c.; but we know at present how to appreciate all those imaginary and wonderful properties. Finally, the root desiccated and torrified is a substitute for coffee, and has been for about twenty years considerably used in some parts of Europe.

D. & M. of Adm. *The root*, in decoction, from ℥j. to ℥ij. to Ibij of water.—*The leaves*, in infusion, one or two handfuls to water Ibij.—Clarified juice, P. Dose, from ℥ij. to ℥iv.—Extractum, P. Dose, gr. x. to xxx.——*Syrupus cichorii compositus, Syrop de chicorée composé*, P. (Wild succory root and rhubarb, āā. 12 parts; succory leaves, 18; fumitory and hartstongue, āā. 6; alkekengi berries, 4; yellow sanders and cinnamon, āā. 1; water, 812; sugar, 160.) Dose, from one to two ounces. This syrup is slightly purgative.——*Syrupus cichorii cum rheo*, A. (Wild succory leaves, 16; succory root, 48; carbonate of potassa, 1; rhubarb root, 64; sugar, 1152; water, 1536.) Same doses.

Dandelion. *Taraxaci herba, radix*, seu *Dens leonis. Leontodon taraxacum*, Lin. Perennial plant, growing abundantly in meadows, and uncultivated grounds. P. U. The leaves and roots.

B. C. Radical leaves, runcinate; scape one-flowered, erect, fistulous, weak; terminal flowers of a golden yellow; exterior involucre, spreading; the interior one erect; fruit, of a pale olive colour, ovoid, surmounted by a radiate pappus, supported by a thin stype.

P. P. Root fusiform, covered with a blackish epidermis; it contains an abundance of milky juice, inodorous, of a bitter, sweetish, and slightly acid taste. The leaves are also slightly lactescent, and of a pleasant bitterness.

C. P. This plant contains a good deal of extractive, a green resin, some fecula, a saccharine substance, some nitrate of potassa and lime, and acetate of lime, &c.

Incomp. Subst. The same as for the wild succory.

Th. E. The properties and administration of the dandelion are the same as those of the wild succory. This plant is frequently

employed and recommended in the chronic affections of the liver, jaundice, dropsy, and in the diseases of the skin.

D. & M. of Adm. *Roots.* Decoction, ℥ss. to ij. to ℔ij. of water.—*Leaves.* Infusion or decoction, one or two handfuls to ℔ij. of water.——*Compound decoction of dandelion*, Stoll. (Roots of dandelion, succory, dog-grass, āā. ℥ijss.; water, ℔ij.; syrup, ℥ij.; sulphate of potassa, ℥ij.; Hoffmann's anodyne, gut. xxv.) Dose, from ℥ij. to iv. two or three times a day.——*Expressed juice from the fresh leaves*, P. ℥ij. to iv.——*Extractum taraxaci*, F., R., L., D. Gr. x. to ℥ss.——*Extractum* seu *Mellago taraxaci*, Pr., Pol., Den. Same doses.

Family Urticeæ.

Hops. *Lupuli fructus*, seu *Coni*. *Humulus lupulus*, Lin. A perennial plant, indigenous to Europe, growing spontaneously in hedges, and cultivated on a large scale in several districts of the north of France, in Flanders, in England, and in the United States, &c. P. U. The fruit and tops.

B. C. Stem herbaceous, angular, rough, climbing; leaves opposite, somewhat similar to those of the vine; flowers dioicous; the male situated in the axilla of the superior leaves, forming irregular groups; the female constitutes a kind of cone, formed of imbricated scales, at the base of which are two sessile flowers; fruit, cones, membranous, ovoid, elongate, two small seeds at the base of the scales.

P. P. This fruit is composed of foliaceous and persisting scales, and covered with small hair charged with a kind of dust called *lupulin*, it is of a green yellow colour, possesses an aromatic and bitter taste, which, when united together in a great quantity, becomes unpleasant and virulent, almost as hemp.

C. P. Independently of lupulin, hops contain, according to Messrs. Payen and Chevallier, a volatile oil, a fatty matter, wax, some acetate of ammonia, malate of lime, tannin, gallic acid, a small quantity of osmazome. Boiling water, alcohol and ether dissolve the active principles of this plant.

Incomp. Subst. The mineral acids, salts of iron, of lead, of silver and mercury.

Th. E. Hops, on account of their bitterness, exercise a tonic action on the animal economy; but it seems to be endowed with narcotic properties besides, for which it is principally indebted to its odour, which is not perceived when it is administered in infusion, extract or tincture. It is successfully employed as a tonic, in order to aid the digestive functions in cases of atony of the gastric organs. It is daily administered in scrofulous affections, in obstructions, rachitis, and in cutaneous diseases, &c. It has been recommended as a febrifuge, but it seldom answers, except in cases of simple intermittent fevers, which disappear spontaneously after a few fits. Its lithontriptic properties are no better ascertained. It is well known that this article enters into the composition of beer.

D. & M. of Adm. *Powder*, gr. xij. to ℈j. and above.—Infusion and decoction, ℥ss. to j. to Ibij. of water.——*Extractum humuli*, U. S., L. Gr. vj. to ℈j.——*Tinctura humuli*, U. S. (Hops, ℥iv.; alcohol, Oj.)—L., E. (Hops, 5; alcohol, 32.) ℥ss. to ij.

Lupulin. *Lupulinum.* A peculiar substance, discovered by Dr. Ives of New York, which appears to be the active principle of hops.

P. P. Small shining grains of a yellowish-white, containing a pulverulent matter of a golden yellow, of an aromatic smell, and very bitter taste.

C. P. According to Messrs. Payen and Chevallier's analysis, this substance is composed of resin, 105; bitter matter, 25; essential oil, 41; gum, and a small quantity of fatty matter and osmazone, some acetate of ammonia, silica, sulphur, oxide of iron and salts, with base of potassa and lime. It is soluble in water, alcohol and ether.

Prep. It is obtained by rubbing the cones of the hops on a sieve; the lupulin passes through and is received on a piece of paper. It is purified by immersing it in water.

Incomp. Subst. The salts of iron, of mercury, of tin and platinum.

Th. E. It possesses the same properties as hops, but in a greater degree; in too large doses it produces a sensation of heat in the epigastric region, and in all the abdomen, some abdominal pains, costiveness, nausea, vomiting, thirst, and sometimes nervous phenomena, such as numbness of the limbs, heaviness in the head, melancholy; but it never produces cephalalgia or giddiness. It is exhibited in the same cases as hops; and moreover, Dr. Freake has recommended it in the form of salve, in order to alleviate the pains caused by cancer in its last period.

D. & M. of Adm. *Decoction* and *infusion*, from ℈j. to ℥j. to water Ibij.——*Lupulin powder*, F. M. (Lupulin, 1 part; sugar, 2 parts.) From gr. x. to ℈j. divided in two or three doses.——*Extract*, F. M. Dose, gr. vj. to xij.——*Tinctura of lupulin*, F. M. (Lupulin, 1 part; alcohol, 2 parts.) Dose, from gut. xx. to xl.——*Syrup*, F. M. (Tincture of lupulin, 1 part; simple syrup, 2 parts.) Dose, ʒss. to ℥j.——*Lupulin ointment*, Dr. Freake. (Lupulin, 1 part; axungia, 3 parts.)

Family Salicineæ.

White Willow. *Cortex salicis. Salix alba*, Lin. A tree indigenous to Europe, and introduced in America: very common in damp places. P. U. The bark.

B. C. Trunk 25 to 30 feet high, branched at top; leaves elongate, lanceolate, covered underneath with white silky hair; male flowers, two stamens; female flowers, ovary inferior; capsule elongate, fusiform, containing several pappose seeds.

P. P. The dry willow bark is rolled up, of various thickness, but generally rather thin, of a fallow brown colour, inodorous, of a very bitter and slightly astringent taste.

C. P. According to Pelletier and Caventou, this substance contains a reddish-brown colouring matter, soluble in alcohol, but almost insoluble in water; a green fatty matter, a tanning matter not precipitated by tartar emetic, and differing consequently from that of cinchona; some gum, and lignous fibres. Water and alcohol dissolve its active principles.

Incomp. Subst. Gelatin, the carbonates of potassa and ammonia, lime water, and sulphate of iron.

Th. E. The willow bark possesses very energetic tonic properties, associated with a slight degree of astringency. Its action upon the economy is very similar to that of the Peruvian bark, except that its febrifuge properties are not so well marked nor so certain. However, when the price of Peruvian bark was very high, it has been administered, and very often with success, in intermittent fevers. Its exhibition is very successful in dyspepsia, chronic hæmorrhage, obstinate mucous discharges, and finally, in every kind of atonic affections.

D. & M. of Adm. Powder, ʒj. to ʒiv. and above. Decoction, ʒij. to ʒj. to ℔ij. of water.——*Extractum corticis salicis*, A., Pr., gr. xij. to ʒij.

Externally. Decoction, in lotions, fomentations, and gargles.

The bark of the *Salix fragilis, capræa, triandria*, &c. is endowed with the same properties, and may be administered in place of that of the *Salix alba.*

Family Polygoneæ.

Garden Patience, or Dock. *Patientiæ radix. Rumex patientia*, Lin. Perennial plant, indigenous to Europe, and naturalized in America, growing abundantly in damp places, and flowering in the summer season. P. U. The root, and occasionally the leaves.

B. C. Stem herbaceous, branched at top, four or five feet high, cylindrical and channelled; leaves elongate, sagittate, supported by long petioles; flowers greenish, in panicles at the top of the branches; calix turbinate, with six divisions; six stamens inserted in the calix; three stigmas; fruit triangular.

P. P. Root long, fibrous, fusiform, brownish externally, yellowish internally, almost inodorous, and of an acrid and bitter taste. The leaves possess a sub-acid taste.

C. P. This substance, of which no accurate analysis has as yet been made, seems to contain sulphur in a free state, some oxalate of lime, starch, and some extractive principles soluble in water.

Th. E. It is a weak tonic, possessing at the same time some diaphoretic properties, but which are probably owing merely to

the circumstance of its being commonly administered in a warm decoction. This root is commonly employed in the treatment of cutaneous diseases, and especially in psora. It is likewise successful in the atonic diseases of the digestive canal. Given in too large doses, it produces alvine evacuations, and even nausea. The leaves are sometimes administered as antiscorbutic; their action is analogous to that of the other species of rumex.

D. & M. of Adm. Decoction, ℥ss. to ℥j. to Ibij. of water.——*Extractum*, P. ℈j. to ʒj.——*Expressed juice of the leaves*, ℥j. to ℥ij.

Family Fumariaceæ.

Fumitory. *Fumariæ herba. Fumaria officinalis*, Lin. An annual plant, indigenous to Europe, growing abundantly in cultivated fields, in gardens and vineyards. P. U. The whole plant.

B. C. Stem herbaceous, branched, glaucous, square; leaves bipinnate and laciniated; flowers purplish, forming a sort of loose spike; calix small, composed of two oval leaflets; corolla, four unequal petals, the superior spurlike, the inferior free; fruit globular.

P. P. This plant contains a large quantity of an aqueous, bitter, and inodorous juice.

C. P. It contains malate of lime, and some bitter extractive principles. It is soluble in water, wine and alcohol.

Incomp. Subst. The salts of iron.

Th. E. It is a weak tonic, very much used in cutaneous diseases, in jaundice, obstructions of the abdominal viscera, scurvy, and in cases of debility of the digestive organs.

D. & M. of Adm. Decoction or *infusion*, one handful to Ibij. of water.——*Expressed juice*, ℥ij. two or three times a day.——*Extract*, P., A., Pr., Pol., ʒj. to ʒij.——*Syrup*, P. ℥ss. to ℥j.

Family Caryophylleæ.

Soapwort. *Saponariæ herba, radix. Saponaria officinalis*, Lin. A perennial plant, indigenous to Europe, and naturalized in this country. It grows spontaneously in cultivated fields, near runs, flowering in June. P. U. The flowered tops and roots.

B. C. Stem erect, branched, cylindrical, knotty; leaves smooth, sessile, oval; flowers of a pale rose colour, in terminal panicles; calix tubular, cylindrical, five parted; corolla, five petals with long claws; ten stamens; two styles; capsule unilocular, opening at top.

P. P. Root cylindrical and knotty, inodorous, possessing, together with the whole plant, an acrid and bitter taste.

C. P. This plant, according to Bucholz, contains resin, 0.25; a peculiar substance of a light brown colour, translucid, inodorous, soluble in water, insoluble in absolute alcohol, and called

Saponin, 34; extractive matter, 0.25; gum, 33; and water, 13. Water takes up saponin, and becomes frothy when agitated. It presents the physical properties of a solution of soap.

Th. E. Soapwort possesses weak tonic properties, and seems to act, at the same time, as a slight diaphoretic. Dr. Alibert has exhibited it with success in certain herpetic affections. It is often employed in jaundice, gout, rheumatism, constitutional syphilis, and in obstructions of the liver and abdominal viscera.

D. & M. of Adm. *Decoction*, ℥j. to ℔ij. of water.——*Expressed juice* of the green plant, ℥ij. to ℥iv. *Extract*, P., ʒss. to ʒij.

Family Lichenæ.

Iceland Moss. *Musci islandici herba. Lichen islandicus*, Lin. *Physcia islandica*, De Cand. A plant growing abundantly in Iceland, and found on rocks in the Vosges, Alps, and Pyrennees. P. U. The whole plant.

B. C. Foliaceous productions, dry, ascending, divided in branched and irregular slips, bordered with fine and short hair, forming thick tufts; fructifications in purple scutcheons, situated obliquely upon the edge of the leaves.

P. P. Leaflets or slips irregular, dry, tough, almost of the consistence of cartilage, of a deep red colour at their base; of a yellowish gray, or whitish at the top, inodorous, of a bitter, mucilaginous taste, devoid of astringency.

C. P. This substance, according to Berzelius's analysis, contains bitter principle, 3; extractive colouring matter, 7; green wax, 1.6; syrup mixed with extractive, 3.6; fecula, 44.6; lignous fibres, 36.6; gum, 3.7; tartrate of potassa and lime, 1.9. Cold water takes up the bitter principle; warm water dissolves, besides the latter, all the fecula.

Th. E. The Iceland moss, on account of its bitterness, acts as a tonic; the great quantity of fecula which it contains renders it also very nourishing. Deprived of its bitter principle, by repeated washings or rather by macerating it in a weak alkaline lie, as Berzelius recommends, it is used as an aliment by the inhabitants of Iceland and of some other parts of the north of Europe. It then acts as gum Arabic and other mucilaginous substances, and it is very frequently administered in pulmonary catarrhs, in diarrhœæ, and other affections requiring the exhibition of remedies of this kind. When the bitter principle is not separated from it, it succeeds in chronic diseases of the lungs, in obstinate and inflammatory diarrhœa, certain atonic dyspepsiæ, and generally, in all the cases where it is necessary to stimulate, in a slight degree, the digestive organs, and to promote at the same time, the strength of the patient by tolerably abundant alimentation without fatiguing the stomach.

D. & M. of Adm. Powder, ℈j. to ʒj. in milk or broth. *Decoction*, ʒss. to ʒj., to ℔ij. of water reduced to ℔j.——*Decoctum lichenis*, U. S., L., E., D. (Lichen, ʒj.; water, Ojss.) ʒss. to ij., alone or mixed with milk.——*Gelatina lichenis islandici*, P. (Lichen, 16; sugar, 34; isinglass, 1; water a sufficient quantity.)—B. (Lichen, 3; sugar 8; water 48.)——*Mucilago lichenis islandici*, Pol. (Lichen, 1; water, 20; reduced to 6.) ʒss. to ij.——*Gelatina lichenis islandici cum cinchona*, P. (Lichen, 16; isinglass, 1; vinous syrup of bark, 40.) Dose ʒss. to j.

The *Lichen pulmonarius*, *Lichen aphtosus*, and *Lichen Pyxidatus*, possess nearly the same properties as the *L. islandicus*, and were once employed to fulfil similar indications.

The Horse-chesnut Bark. *Cortex hippocastani. Æsculus hippocastanum*, Lin. of the family of the *hippocastaneæ*, is brown, very uneven externally, yellowish internally, inodorous, and of a bitter and astringent taste. Its composition, according to Pelletier and Caventou, is nearly the same as that of the white willow bark. It possesses very energetic, tonic, and astringent powers, which may be beneficially used under several circumstances. Some have tried to exhibit it as a substitute for Peruvian bark in the treatment of intermittent fevers; but numerous experiments have proved that it cannot be done with any advantage.

The fruit of this tree has a very bitter taste, of which it is deprived by means of maceration in a weak lie. They contain a great proportion of starch, and according to Canzoneri, a peculiar substance, brown, and of a sweetish taste, which he has called *Esculin*.

The horse-chesnut bark in powder is used in the dose of from ʒss. to j. or in decoction, ʒj. to ℔ij. of water.

Common Holly. *Ilex aquifolium*, Lin. A shrub of the family rhamneæ, an evergreen, very common in the woods of Europe. The leaves are even, shining, of a lively green, of a very bitter and disagreeable taste. According to Lassaigne, they contain a bitter principle, uncrystallizable, decomposed by alcohol, a yellow colouring matter, some wax, gum, and several salts. This substance acts like the tonics. It is employed in the cure of intermittent fevers, and it has been recommended in some cases of gout and chronic rheumatism. It may be administered in powder, in the dose of ʒss. to j. and in decoction, from ʒss. to j. Dr. L. Rousseau has given with much effect, in intermittent fevers, the *wine of holly*, prepared by infusing, during twelve hours, one drachm of pulverized leaves of holly, in a tumbler of white wine, he exhibits this infusion two or three hours before the paroxysm.

The inside bark of holly is used to prepare bird-lime, which has been recommended as an emollient application on arthritic tumours.

The leaves of the Olive Tree, *Olea Europæa*, Lin., of the family *Jasmineæ*, possess a very bitter and harsh taste, and contain tannin and gallic acid. They are frequently used in the south of France in intermittent fevers. Several trials, which have been made at the Hospital de la Charité, induce us to believe that they are not without some beneficial action. They may be administered in powder or decoction during the apyrexia.

The green capsulæ of the Common Lilac, *Syringa vulgaris*, Lin., a shrub belonging to the same family, and very common in our gardens, are of an excessive bitterness, without any mixture of astringency. Professor Cruveilhier has employed them with great success, as a substitute for Peruvian bark, in the treatment of intermittent fevers. They might likewise be used in decoction in cases requiring the use of tonics.

The root of the Bitter Polygala, *Polygala amara*, Lin., a plant indigenous to Europe, belonging to the family *Polygaleæ*, and growing abundantly in uncultivated places, possesses a very great degree of bitterness. It acts as a tonic remedy, but very often produces alvine evacuations. It has been highly recommended in diseases of the lungs; but we may easily perceive that it must be more hurtful than beneficial in inflammatory cases. It is used as a tonic, in decoction, in the dose of ℥j. to ℔ij. of water, and in powder, ℈j. to ʒj.

[The root of the *Polygala rubella*, a native plant very nearly related to the preceding, possesses the same physical and medicinal properties.]

Family Leguminosæ.

[Wild Indigo. *Baptisia tinctoria*, Nuttall. *Podalyria tinctoria*, Lam. *Sophora tinctoria*, Lin. A native perennial plant, growing in woods and poor soils. P. U. The whole plant, and root principally.

B. C. Stems two or three feet high, very ramose; leaves ternate, folioles nearly sessile, obovate, smooth, of a bluish-green; flowers of a bright yellow colour, in small loose spikes at the end of the branches; calix bilabiate; pistil single and stipitate, succeeded by a swelled oblong pod of a bluish-black colour.

P. P. Root woody and irregular, no smell, taste sub-acrid and nauseous.

Th. E. In large doses this plant has been found to act as a powerful emetic and cathartic; but a weak decoction of the root has frequently been given with the effect only of a gentle cathartic. A decoction of the bark of the root is said to have been made known by an empiric skilled in its use, as a remedy in

Scarlatina anginosa, and its employment has been extended, in a few instances, to typhus or putrid fever, with such good effect as to encourage further trials. An experienced physician considers it as an excellent antiseptic and febrifuge, preferring it in some fevers to Peruvian bark. As an external application, its antiseptic qualities ought to be more extensively known. In the form of fomentation and cataplasm, it has proved eminently beneficial when applied to phagedenic and gangrenous ulcers, especially if the decoction be administered internally at the same time. A liniment prepared by simmering the cortical part of the root in cream, has been found an efficacious application to sore nipples and ulcered breasts.]

Family Ranunculaceæ.

[Gold Thread. *Coptis trifoliata*, Salisb. *Helleborus trifolius*, Lin. A small ever-green perennial plant, native of Siberia and the northern parts of North America. P. U. The root.

B. C. Caudex, or base of the scapes and radical leaves covered with imbricate and yellowish scales; leaves evergreen, ternate, proceeding from the caudex; folioles rounded or obovate, with an acute base, and margin with unequal acuminate crenatures and lobes; flowers solitary, with a white corolliform calix of five or six deciduous sepals or folioles; corolla with as many nectariferous petals, shorter, obovate, hollow, yellow at the top; stamina many; pistils from five to eight; capsules the same number, umbellate, rostrate, unilocular, and many-seeded.

P. P. Root of a fine golden colour, intensely bitter, without smell, nor astringency.

Th. E. According to Dr. Thacher, the root has long been a popular remedy in the New England States, for aphthous affections of the mouth, and experience has evinced its beneficial effects; it is considerably used as a stomachic bitter in debility of the stomach and loss of appetite. According to Dr. Bigelow, this root is entitled to rank, as a pure tonic bitter, with most articles of this description, such as gentian, quassia, columbo, &c.]

[Yellow-root. Yellow Pucoon. *Hydrastis canadensis*, Lin. A native herbaceous plant, growing in rich shady woods, on the bank of streams, deep valleys, &c. P. U. The root.

B. C. Stem almost one foot high, simple, straight; top with two unequal leaves, the first petiolate, cordate, palmate, five to seven lobed; the upper one sessile, three lobed; flowers single, terminal on a peduncle shorter than the upper leaf; three petals, flesh or rose-coloured; berry compound, granulations uniseeded.

The root is a powerful bitter; when dried, it has a strong virous smell. An alcoholic infusion is employed as a tonic bitter, in the western part of Pennsylvania; a cold watery infusion is also

used as a wash in inflammation of the eye. The root furnishes a most brilliant yellow colour, which will probably be found a very valuable dye.]

[Parsley-leaved Yellow-root. *Zanthorhiza apiifolia*, Lin. A small shrub, native of the southern states. P. U. Root and wood.

B. C. Stem from two to three feet high, simple, smooth, wood yellow; leaves ternate, crowded together at the upper portion of the stem; flowers in divided racemes, drooping below the leaves, of a dark purple colour, with obovate, bilobed and deep purple nectaries; capsules inflated and compressed, one-celled, two-valved, opening at the apex; seeds oval and flattened.

Th. E. The medical virtues of this shrub are those of a very pure and tonic bitter, very nearly allied to columbo, to which it is probably in no way inferior. Dr. Woodhouse, who has experimented with this article, asserts that the bark of the stem is preferable to any other part of this shrub. He has frequently employed the powder with success, in doses of two scruples to an adult, in many of those diseases in which bitters are recommended. This article promises to become a valuable addition to the materia medica of the United States.]

The Codaga-pala is the bark of the *Nerium antidysentericum*, Lin., *Wrightia antidysenterica*, R. Brown, a shrub of the family *Apocyneæ*. This article is in scales, somewhat curled up, reddish internally, wrinkled on the outside, of a bitter and acrid taste. It is very much used in India in the treatment of dysentery. It has not been yet employed in this country, nor in Europe; but it might be administered as an excitant tonic, in the dose of ℥j. to ℔ij. of water, in decoction, or in that of ℈j. to ʒss. in powder.

Tonic Animal Substance.

Extract of Beef's Gall. *Extractum fellis taurini.*

P. P. Soft substance, of a greenish yellow colour, of a very bitter but peculiar taste, attracting the moisture of the air.

C. P. Gall is composed of water, 700; resinous matter, 15; picromel, 69; yellow matter, 4; soda, 4; and sundry salts, 7. The extract contains a much lesser proportion of water; it is almost entirely soluble in water and alcohol.

Prep. Evaporate the beef's gall slowly in a silver basin.

Th. E. This very bitter substance is endowed with the most decided tonic properties. It has been successfully used to increase the activity of the digestive organs, and in all the cases in which the exhibition of tonic remedies is indicated. It is now very much out of use.

D. & M. of Adm. In pills, ʒj. to ij. a day.——*Syrup.* (Extract of beef's gall, alcohol and sugar, e. p.) ℥j. a day.

CHAPTER VI.

STIMULANTS OR EXCITANTS.

WE call stimulants, (from stimulare, to stimulate,) the remedies, the immediate effect of which is to increase momentarily the energy of the vital functions. It is principally through the influence they exercise on the circulation and animal heat, as well as by the rapidity and short duration of their effects that stimulants differ from tonics.

The phenomena which substances endowed with this property produce on the animal economy, are of two kinds: some are produced by their local action upon the digestive organs, and by the sympathetic effects resulting from it; the others depend on the absorption of their particles and on the influence they exercise on all the organs. Indeed, as soon as a stimulant remedy comes in contact with the gastro-intestinal mucous membrane, it quickens the activity of the digestive organs and produces a sensation of heat in the epigastric region. It is soon absorbed, and then the contractions of the heart become more frequent and strong; the pulse, consequently is more rapid and energetic; respiration is quickened; the production of animal heat is increased; the capillary circulation becomes more active; the complexion enlivens, the eyes are more brilliant, the intellectual faculties are more acute; muscular strength is augmented, and movements are more easy and quick; the genital organs, the urinary and cutaneous secretions, in a word, the whole economy participates in the unusual activity which characterizes the stimulant medication, and this excitation may even be carried to such a degree as to induce symptoms of an inflammatory fever. This super-excitation caused by the action of these remedies is frequently followed by more or less loss of strength, which is in general, the greater in proportion as the stimulant substance has acted with more energy and promptitude.

In almost all the modern works on materia medica, their authors separate the substances which excite the tissues in a very transient manner and react promptly upon the brain, from the other stimulating remedies. They are called diffusible (*diffundere*, to diffuse, to scatter;) but as these differences appear to us to be very often indeterminate, and besides, as this division separates substances inducing very anologous effects, we have not thought proper to follow this arrangement.

Amongst the substances possessing in a greater or smaller de-

gree the properties we have just enumerated, as belonging to the stimulants in general, several of them seem to act, at the same time, more especially upon one or more organs; iodine, for instance, produces a disturbance in the whole economy, which exercises especially its irritating influence upon the glandular system. These differences will enable us to establish, on this basis, some sub-divisions among the stimulant remedies themselves.

The three kingdoms of nature furnish, each of them, some of the stimulants. Most of the vegetable substances which are endowed with this property, are generally remarkable for their strong and aromatic smell; they are indebted for their virtues to the presence of an essential oil, a resin, a balsam, benzoic acid, or camphor. The stimulating mineral substances very often possess also, a peculiar odour; as to the stimulants derived from minerals, they are in this respect distinguished by no property whatever.

All the essential or volatile oils are acrid, pungent, very odorous, and deprived of viscosity; their specific gravity is commonly less than that of water; they burn easily and with a thick smoke. Water dissolves only a very small quantity and becomes then an aromatic water. They are very soluble in alcohol: these solutions receive the name of spirits and are decomposed by water, which gives them a milky appearance, by precipitating the essential oil. They are composed of carbon, of a large proportion of hydrogen, and perhaps some nitrogen. To these oils the plants called aromatic are indebted for their odour and the hot and sharp taste which distinguishes them. They are produced by the secretion of numerous small glands existing in most of the organs of plants. They are generally obtained by distillation. Their action upon the economy is in general very energetic.

Resins, although differing very much from each other, are all solid, brittle, inodorous when they are pure; insipid or acrid; more or less transparent; a little heavier than water; most of them are soluble in alcohol, ether, fixed or volatile oils, alkalies, &c. Water has no action upon them and precipitates them from their solutions.

Gum-resins are not proximate principles, but they are formed of gum, resin, an extractive matter, and an essential oil. Their taste is acrid, and they possess a strong smell. They are partially soluble in water and alcohol. In whatever they vary in other respects, we shall indicate in the sequel of this work.

Balsams are also compound substances; on analysis, we find them to contain resin, benzoic acid, and often some essential oil. Heated, they are decomposed, and the benzoic acid partly volati

lized. Water takes up a portion of this same principle. Finally, they are soluble in alcohol, ether, and volatile oils. We shall speak of benzoic acid and camphor more particularly hereafter.

From the remarks we have already made, it is evident that stimulating remedies are contra-indicated in cases of acute inflammation. The best results are, on the contrary, obtained from them in chronic phlegmasiæ and in affections produced and maintained by the atony of the organs, such as chronic catarrhs, passive hæmorrhage, gangrenous affections, adynamic fevers, scrofulous and scorbutic diseases, &c. As to the medications which these substances are expected to fulfil, in relation to the speciality of action of several of these remedies, they are so numerous and so different, that we must confine ourselves, for the present, to giving simply a general idea of their action; but we shall enter more fully on this subject, when we treat of each of the divisions we are going to establish respecting these substances.

Diffusible or General Stimulants.

We shall place under this head such of the stimulating remedies as do not appear to act, in a special manner, on a particular organ, but the exciting action of which is equally felt throughout the whole economy.

They are commonly exhibited in the same cases as the tonics, to which they bear a great resemblance, and with which they are often associated.

General Stimulants obtained from the Mineral Kingdom.

Hydrochlorate of Ammonia. *Ammoniæ hydrochloras* vel *murias*. Sal ammoniac. It is found in nature, principally in the vicinity of volcanoes. Mount Etna furnishes this substance in pretty considerable quantities.

P. P. It is found in commerce, in masses concave on one side, and convex on the other, or in conical pieces, crystalline, white, inodorous, of a bitter and acrid taste. This salt is compressible and difficult to pulverize; when pure, it crystallizes in pectiniform needles; its specific gravity is 1.45.

C. P. It is composed of hydrochloric acid, 61.4, and ammonia, 38.6. It is unalterable in the air, soluble in three parts of cold, and in a less quantity of boiling water; it is entirely soluble in 4.5 of alcohol; its solution in water is attended with a considerable depression of temperature. Submitted to the action of

caloric, it melts and volatilizes without decomposing, and when it is mixed, even in the solid and cold state, with an alkaline carbonate, it emits a very strong odour of ammonia.

INCOMP. SUBST. The oxides of the second class, the salts of lead, silver, sulphuric and nitric acids, &c.

PREP. It is prepared on a large scale by treating the carbonate of ammonia obtained by the distillation of animal substances, with the sulphate of lime, and by decomposing afterwards the sulphate of ammonia which takes place, by means of a solution of hydrochlorate of soda. The liquor is evaporated, and the very impure sal ammoniac thus obtained is purified by sublimation. In Egypt, it is obtained by distilling camel's dung.

TH. E. Applied externally in large quantity, the sal ammoniac produces at first a more or less lively irritation; it is afterwards absorbed, and its action is felt by the stomach, which it irritates powerfully, and afterwards the nervous system feels the same impression. Taken internally, its action is the same, and it produces nausea, vomiting, and nervous symptoms, such as delirium, convulsive motions, &c. Administered in small doses, it acts as a stimulant upon the whole economy, and more especially upon the skin, of which it increases the secretion. It may be exhibited advantageously in cutaneous affections, rheumatism, anasarca, passive dropsies, &c. Associated with bark, it succeeds in the treatment of obstinate intermittent fevers. It is used externally, dissolved in water, as resolvent and refrigerant in superficial inflammations, in head-ache, &c. It is likewise very useful in certain indolent tumours, in gangrene, diseases of the skin, and as a gargle in chronic angina.

D. & M. OF ADM. *Internally*, gr. vj. to viij. in pills, three or four times a day. As a *febrifuge*, ℈j. to ʒss. united with bark and the extract of gentian.——*Febrifuge boluses*, PARIS H. (Peruvian bark, ʒv.; rhubarb, ʒss.; muriate of ammonia, gr. xxx.; syrup of peach flowers, a sufficient quantity; for ten boluses.) Dose, one every three hours.——*Stimulating mixture*, PARIS H. (Pulverized bark, ʒss.; muriate of ammonia, gr. xij.; red wine, ʒvj.) for a dose.

Externally, in lotion, ʒij. to vj. to 2℔ of water.——*Bath*, ʒviij. in a sufficient quantity of water.——*Stimulating lotion*, Dr. PARIS. (Muriate of ammonia, ʒij.; acetic acid, ʒij., camphorated alcohol, ʒss.)——*Resolvent lotion*, (Muriate of ammonia, alcohol, āā. ʒj.; water, ʒix.)——*Resolvent gargle*, PARIS H. (Muriate of ammonia, ʒj.; vinegar, ʒij.; honey, ʒjss.; water, ʒxij.)——*Resolvent poultice*, PARIS H. (Muriate of ammonia, ʒss.; sub-acetate of lead, ʒj.; emollient poultice, ʒiv.)

NEUTRAL ACETATE OF AMMONIA. *Ammoniæ acetas. Spiritus Mindereri.* This salt exists in small quantities in corrupted urine, and according to Chevallier, in some vegetables.

P. P. Colourless liquid, transparent, inodorous, of a sharp and cooling, then sweet taste. This salt, in the neutral state, does not crystallize; but in that of bi-salt, it is susceptible of pro-

ducing crystals of a pearl white colour, long, very thin, flattened, very deliquescent and fusible at 77° Centig. (170½° Fahr.)

C. P. It is composed, according to Richter, of acetic acid, 65.77; ammonia, 31.23; it is very soluble in water and in alcohol; it is altered by the contact of the air and light; heated it volatilizes entirely. By a proper evaporation, crystals of bi-acetate of ammonia may be obtained.

Prep. The spirit of Mindererus may be prepared directly by saturating water of ammonia with acetic acid; but most of the pharmacopœiæ direct that the sub-carbonate of ammonia be acted upon by acetic acid until it is perfectly saturated, which may be ascertained by means of litmus.

Incomp. Subst. The fixed alkalies, concentrated acids, corrosive sublimate, and nitrate of silver.

Th. E. As all the ammoniacal compounds, the spirit of Mindererus exercises upon the animal economy a very powerful stimulating action, but which seems to influence more especially the skin and the urinary apparatus. It is consequently considered as a powerful diaphoretic. Its employment is recommended in certain cases of gout, of chronic rheumatism, in certain inveterate cutaneous affections, in cases of variola, varicella, scarlatina, and measles, when the eruption does no take place in a satisfactory manner, or has been suppressed by some accident. It is exhibited with success in dangerous typhoid fevers, which occurs in camps, hospitals and prisons. Dr. Masuyer has used it advantageously in cases of intoxication, and in violent colic, preceding and accompanying menstruation in certain females. Dr. Godard has obtained the greatest success in several cases of this nature. This remedy is much more frequently used in Germany than in other parts of Europe. [In the United States, spiritus Mindereri is very much commended by the best writers on this subject, and deservedly very much esteemed, and used with the greatest advantage as a diaphoretic. See Dr. Chapman's Therapeutics.]

D. & M. of Adm. As a stimulant and diaphoretic, ʒj. to ʒij. a day, in several ounces of any vehicle. As an emmenagogue, and in intoxication, gut. xxx. to xl. In a glass of sweetened water.——*Acetas ammoniæ solutus dilutus*, A., P., F. (Liquid acetate of ammonia and distilled water, āā. c. p.) *Antiseptic mixture*, P. (Acetate of ammonia and syrup of bark, āā. 32; alcoholic tincture of bark, 8; camphor, 0.6; infusion of valerian, 128.) Dose from one to two table spoonfuls every hour.——*Stimulating mixture*, Paris H. (Acetate of ammonia, ʒij.; simple syrup, ʒj.; orange flower water, ʒiv.; infusion of linden tree flowers, ʒiv.) Dose, a table spoonful.——*Diaphoretic mixture*, Dr. Paris. (Camphorated mixture, ʒjss; acetate of ammonia, ʒss; antimonial wine, gut. xx.; tincture of opium, gut. x.) To be taken in two doses.——*Stimulating mixture*, Dr. Paris, (Acetate of ammonia, ʒij.; decoction of bark, ʒx.; tincture of bark, ʒij.; aromatic confection, ʒss.) To be taken at once, and repeated every three or four hours.

Externally, in lotions; in collyria and injections, diluted with rose water.——*Refrigerant lotion*, (Acetate of ammonia, ʒvj.; spirit of rosemary, ʒij.; water ℔j.)

Sub-carbonate of Ammonia. *Ammoniæ sub-carbonas. Concrete volatile alkali. Volatile salt.* It does not exist in nature; but it forms spontaneously in the putrefaction of animal matter.

P. P. White masses, semitransparent, composed of a collection of small crystals resembling fern leaves, of a fibrous texture, of a sharp ammoniacal smell, of a caustic and urinous taste, of a specific gravity of 0.966. This salt effloresces in the air, volatilizes at a common temperature and loses its ammoniacal smell.

C. P. The sub-carbonate of ammonia is composed of carbonic acid, 56.41; ammonia, 43.59; besides water in the proportion of one-eighth to one-twelfth; it is soluble in two parts of water at 16° Centig. (61° Fahr.) still more so in this liquid at 40° Centig. (104° Fahr.) and is insoluble in alcohol. It volatilizes, and is partly decomposed in boiling water. Finally, it is endowed with alkaline properties, and turns green the tincture of violets.

Prep. It is obtained by heating in a retort one part of hydrochlorate of ammonia with one and a half of carbonate of lime; it condenses in the receiver, which requires to be covered with wet rags.

Incomp. Subst. Acids, the oxides of the second class, the sulphates of magnesia, iron, and zinc; acetate of lead, corrosive sublimate, &c.

Th. E. This salt possesses the same properties as the liquid ammonia, but they are less energetic. It is a very active stimulant, which, administered in too large doses, acts like irritating poisons, and inflames the digestive organs. In moderate doses, it is useful in most cases mentioned under the head of ammonia, (see page 66.) The English practitioners use it in the convulsions of children produced by dentition, and principally when acidity exists in the primæ viæ. Dr. Richoux has administered it with success in croup; he employs it likewise externally, under the same circumstances, to rubify the lateral parts of the neck; it acts less powerfully than the aqua ammoniæ.

D. & M. of Adm. *Internally*, in the dose of gr. vj. to gr. x., three or four times a day, in pills or in a mixture.——*Ammoniacal syrup*, Dr. Richoux. (Sub-carbonate of ammonia, ʒj.; syrup of althæa, ʒiij.) Dose, a spoonful every two or three hours.——*Dr. Paris's stimulant mixture.* (Sub-carbonate of ammonia, ʒss.; syrup of orange peel, ʒss.; mint water, ʒviij.) Dose, a spoonful every two hours.——*Dr. Paris's stimulant pills.* (Sub-carbonate of ammonia, aromatic confection, āā. gr. v.; pulverized cantharides, gr. j.; simple syrup, a sufficient quantity to make a bolus.) Dose, one every six hours.——*Anti-acid pills.* (Sub-carbonate of ammonia, gr. v.; extract of rhubarb, gr. viij.;) for two pills.——*Aqua sub-carbonatis ammoniæ*, U. S., D. (Muriate of ammonia and carbonate of potassa, āā. ℔j.; water, Oij.; distil to dryness in a glass retort.)——*Liquor sub-carbonatis ammoniæ*, L., E., Pol. (Sub-carbonate of ammonia, one part, distilled water, two parts.) Dose, ʒss. to ʒj. in a bland fluid.

Externally, as rubefacient.——*Rubefacient salve.* (Sub-carbonate of ammonia, ʒj.; simple cerate, ʒij.)——*Linimentum ammoniæ sub-carbonatis*, L. (Solution of sub-carbonate of ammonia, f.ʒj.; olive oil, f.ʒiij.)

Volatile Salt of Hartshorn. *Sal volatile cornu cervi*, is nothing but the sub-carbonate of ammonia mixed with some foreign matter, especially with the empyreumatic oil of Dippel. It is now very seldom used.

Volatile Spirit of Hartshorn, of Silk Thread. *Spiritus volatilis cornu cervi, &c.*, is a solution of oily sub-carbonate of ammonia, produced by the distillation of hartshorn, silk, or any other animal matter.

It is seldom used, but when exhibited, it is in the dose of from x. to xx. drops in a suitable menstruum. It enters into the composition of the *Ammoniacal alcoholate of lavender*, P. (volatile spirit of silk thread, 32; essential oil of lavender, 1; alcohol, 4;) which is administered in the dose of from gut. x. to xxx. in a suitable vehicle, in hysteria, spasms, &c.

Arsenite of Potassa. *Potassæ arsenis.* It is always the product of art.

P. P. This salt is liquid, colourless, uncrystallizable, but producing by evaporation a very deliquescent viscous mass. Its taste is similar to that of the white oxide of arsenic, and is inodorous.

C. P. The arsenite of potassa is soluble in water; desiccated and thrown upon burning coals, it decomposes; the arsenious acid is sublimed under the form of white fumes, of a garlic smell, and the potassa remains free. Heated with hydro-sulphuric acid, it produces, by means of several drops of another acid, a yellow precipitate of sulphuret of arsenic. The salts of copper produce with it a green precipitate.

Prep. It is prepared by heating together one hundred parts of distilled water, one part of arsenious acid, and another of very pure sub-carbonate of potassa.

Incomp. Subst. Lime water, hydro-sulphate of potassa, infusions or decoctions of barks.

Th. E. The action of this salt upon the animal economy is the same as that of the arsenious acid, (see page 63); it is one of the most violent poisons; in very small doses, it operates as a very energetic stimulant. Dr. Fowler was the first who introduced it into practice. It is exhibited with success in certain intermittent fevers, periodic head-aches, some chronic affections of the viscera, when there is no acceleration in the circulation. Dr. Biett has used it at the Hospital St. Louis, in the treatment of certain obstinate cutaneous affections. It is indeed a very dangerous remedy, the administration of which, requires much prudence and caution.

D. & M. of Adm. *Liquor potassæ arsenitis*, U. S. *Liquor arsenicalis*, L. *Solutio arsenicalis*, E. *Liquor arsenicalis Fowleri*, P. (White oxide of arsenic, and sub-carbonate of potassa, āā. gr. lxiv.; distilled water, one pint; alcohol or compound spirit of lavender, f.ʒss.) This solution contains half a grain of white arsenic to the fluid drachm. Dose, from four to ten drops, and progressively to thirty, twice a day in a proper vehicle.——*Arsenis potassæ aquosus*, F. Same preparation as the preceding, with the omission of the alcoholic liquor. Same doses.

Bi-arseniate of Potassa. *Potassæ arsenias.* Neutral arsenical salt of Macquer. It does not exist in nature.

P. P. White crystals, transparent, in four-sided prisms, inodorous, of an acid taste.

C. P. This salt is very soluble in water; its watery solution reddens litmus. Heat transforms it into a neutral arseniate. Mixed with charcoal, it decomposes at a high temperature, and the metallic arsenic sublimes. Acids and salts act on it nearly in the same way as on the arsenite.

Prep. It is obtained from a mixture of equal parts of white oxide of arsenic and nitrate of potassa, heated gradually to red heat. The residuum is dissolved in distilled water, and the liquor evaporated.

Incomp. Subst. The same as for the arsenite of potassa.

Th. E. Its action and employment are the same as the preceding.

D. & M. of Adm. Gr. one-sixteenth to one-eighth, in pills with crumb of bread.——*Metallic febrifuge mixture*, Paris H. (Arseniate of potassa, gr. one-fifth; mint water, ʒiij.; simple syrup, ʒss.) By table-spoonful during the apyrexia.

Arseniate of Soda. *Sodæ arsenias.* It does not exist in nature.

P. P. White transparent crystals, assuming the form of regular hexaedral prisms.

C. P. The arseniate of soda is very soluble in water, and acts with reagents as the arseniate of potassa.

Prep. Pour into a solution of arsenic acid a slight excess of soda or of carbonate of this base, and evaporate slowly the liquor.

Incomp. Subst. The same as for the preceding.

Th. E. It is exhibited to fulfil the same indications as the arseniate of potassa. It is employed in England, especially in intermittent fevers. Dr. Biett uses it frequently at the Hospital St. Louis, and prefers it to the arsenite of potassa as being of a more easy administration. He employs it in squamous tetters, and in prurigo formicans.

D. & M. of Adm. Gr. one-sixteenth to one-eighth a day, in solution or in pills.——*Pearson's solution*, Paris H. (Arseniate of soda, gr. iv. distilled water, ʒiv.) Dose, ℈j. to ʒj. a day.

Arseniate of Ammonia. *Ammoniæ arsenias* does not dif-

fer from the two preceding arseniates in relation to its physical and chemical properties, and is prepared in the same way. Dr. Biett was the first who tried it in 1818; it has been since used in Germany in the same cases as the preceding, and principally against the humid squamous tetters, (*Dartres squammeuses humides,*) which are not accompanied with a great inflammation. It does not seem to be so successful in the furfuraceous and lychenoid squamous tetters. A *solution of arseniate of ammonia* is prepared at the Hospital St. Louis, (arseniate of ammonia, gr. viij,; distilled water, ℔ss.; spirit of angelica, ℥ss.;) which is employed in the same doses as that of Pearson.

Proto-arseniate of Iron. *Ferri arsenias* is found in nature in the mines of Cornwall, but in very small quantities, under the form of small cubic crystals. This salt, almost insoluble in water, has been proposed in England as a remedy against cancerous diseases. Dr. Biett has exhibited it with advantage in corroding scrofulous tetters. He is in the habit of using the *pills of arseniate of iron*, Paris H. (arseniate of iron, gr. iij.; extract of hops, ʒij.; pulverized althæa root, ʒss.; syrup of orange-flower water, q. s.;) for 48 pills; of which one is given every day, and even two may be given after they have been used for some time.

We shall again repeat that all these arsenical preparations are very poisonous and dangerous, and that they must be administered with the greatest caution. (See white oxide of arsenic, page 63.)

Nitric Acid. *Acidum nitricum* does not exist in nature, except in combination with potassa, lime, and some other salifiable bases.

P. P. A transparent, colourless liquid, of a strong and disagreeable smell, of a very acid and caustic taste, producing, when exposed to the air, white and irritating vapours, of the specific gravity of 1.513.

C. P. It is composed of nitrogen 100, and oxygen 250, in volume. It has a great affinity for water and cannot be obtained deprived of this liquid; in fact it contains fifteen per cent. of it when it is concentrated in the highest degree; it attracts the moisture of the air; mixed with water, it congeals at — 64° Centig. (— 83° Fahr.) in a thick mass. Heated, it boils at 86° Centig. (187° Fahr.;) at a red heat, or mixed with charcoal, it decomposes and produces orange-red vapours. It rapidly disorganizes organic substances and colours them yellow. It has a great affinity for salifiable bases, and put in contact with iron, zinc, tin, &c. it occasions a lively effervescence, with a considerable disengagement of deep red vapours.

Prep. It is obtained on a large scale, by decomposing nitrate of potassa by sulphuric acid, in cast iron cylinders, with the assistance of heat, and is purified by adding to it some nitrate of barytes, and distilling it slowly in a glass retort.

Incomp. Subst. Salifiable bases, carbonates, &c.

Th. E. Concentrated nitric acid is one of the most energetic caustics; it disorganizes instantaneously the parts which it touches; diluted with a large quantity of water, it acts only as a stimulant. Its action is very powerful; administered for a certain time, it produces all the symptoms of an inflammatory fever, of cough, spitting of blood, &c. It is exhibited with success, in the form of lemonade, in typhoid fevers, in chronic affections of the liver, in some cases of asthma, in certain kinds of dyspepsia, in scurvy, &c. This remedy has been highly recommended in England, principally in the treatment of syphilis; but numerous experiments carefully performed, have proved that it can in no way, become a substitute for mercury; it has been found useful only during the course of mercurial treatment, in cases where the constitution was debilitated, in order to promote the general strength and to counteract the bad effects of mercury. Externally, it is used as an excitant and astringent in cases of atonic ulcers, of spongy granulations and certain diseases of the skin. Concentrated, it is employed to cauterize warts, poisoned wounds, ulcers complicated with hospital gangrene, &c.

D. & M. of Adm. *Internally. Nitric lemonade*, ʒss. to ʒij. to a pint of water, or rather such quantity as will produce a pleasant acidity.——*Acidum nitricum dilutum*, L. (Nitric acid, f.ʒj.; distilled water, f.ʒix.) Dose, ♏. xv. to xxx. in four ounces of a vehicle.)—E., D. (Nitric acid and distilled water, equal quantity by weight.) Dose, from ten to twenty drops.——*Spiritus ætheris nitrosi, Spiritus nitri dulcis*, U. S., L. (Alcohol, Oij.; nitric acid, ʒiij.; distil twenty-four fluid ounces.)—P. (Alcohol, ℔j.; nitric acid, ℔ss.; distil the liquor.)—E. (Alcohol, ℔iij.; nitrous acid, ℔j.; distil the liquor.)——*Spiritus nitrico-æthereus*, Pr., Pol., F., A. (Nitric acid, 12; alcohol, 48; calcined magnesia, or quick lime, 1.) Dose, gut. xx. to xl. in any menstruum.

Externally. In lotions, baths, fomentations, ʒiv. to ʒvi. diluted with one pound of water.——*Unguentum acidi nitrosi*, U. S., E. (Hog's-lard, ℔j.; nitrous acid, f.ʒvi.)—D. (Olive oil, ℔j.; hog's-lard, ʒiv.; nitrous acid, f.ʒj.)—*Unguentum nitricum, oxigenated ointment*, P. (Nitric acid, one part; axungia, eight parts.)—B. (Nitric acid, 1; axungia, 16.)

Sulphurous Acid. *Acidum sulphurosum.* Volatile vitriolic acid. It does not exist in nature, except in the proximity of volcanoes and in solfataras.

P. P. A colourless gas, of a strong unpleasant and penetrating smell, very generally known, producing cough, when it penetrates into the lungs, and of a specific gravity of 2.222.

C. P. This acid is composed of sulphur 100, and oxygen 99.44, according to Berzelius. Water at the temperature of 20° Centig. (68° Fahr.) and under the pressure of 76 centimeters, (about 30

English inches,) dissolves 37 times its volume of it. A strong heat does not decompose it; it liquifies by the cold produced by a mixture of two of ice, and one of sea salt, and a colourless liquid is thus obtained, of a specific gravity of 1.45, boiling at — 10° Centig. (+ 14° Fahr.) very volatile, and producing by its very rapid evaporation, a cold sufficient to freeze mercury. Finally, it unites with most salifiable bases and forms salts with them.

Prep. It is obtained by burning sulphur, in contact with the air, or else by decomposing, with the assistance of heat, sulphuric acid by a combustible substance, such as saw-dust, straw, &c. By receiving in vases full of water the gas resulting from this operation, the liquid sulphurous acid is obtained.

Th. E. Inhaled in large quantities, sulphurous acid gas, causes asphyxia and death; in small quantities, it powerfully irritates the windpipe, produces a violent cough, a contraction of the chest, and even spitting of blood. Applied to the skin, it causes a very lively excitation, which is soon propagated to the whole economy and increases the energy of the organs. Fumigations with sulphurous acid have been very successfully employed in most chronic diseases of the skin and principally in psora, in certain cases of rheumatic and arthritic pains, in scrofulous engorgements, &c. The sulphurous acid dissolved in water, is used in lotions in several cutaneous diseases, and in the treatment of atonic ulcers.

M. of Adm. The fumigating apparatus consists in a kind of box, constructed in such a manner as to let out the head of the patient, who is placed in it; but all the remainder of the body is inclosed in it. About half an ounce of sulphur is placed on a heated iron plate, and the vapour disengaged from it, is made to enter the interior of the box.

Hydro-chloric Acid. *Acidum hydrochloricum.* Muriatic acid. Spirit of salt. It exists in nature only in combination with metallic oxides, and especially with soda. It is, however, found occasionally united with water, in the neighbourhood of volcanoes.

P. P. This acid, when pure, is a colourless gas, producing white fumes in the open air, of an acid taste, of a suffocating peculiar smell, and of the specific gravity of 1.247. The hydrochloric acid of the shops is a saturated solution of this gas in water. It is colourless or slightly yellow; its odour and savour are the same as those of the gaseous acid; it produces likewise white fumes in the atmosphere, and its specific gravity is 1.298.

C. P. The hydro-chloric acid gas is composed, in volume, of equal parts of hydrogen and chlorine at a temperature of 20° Centig. (68° Fahr.) and under the pressure of thirty inches, water dissolves 464 times its own volume of it. It is not decomposed by

heat. Exposed to a cold of — 50° Centig. (— 58° Fahr.) and under a strong pressure, it becomes liquid. The aqueous solution heated, boils quickly, and permits a great part of the acid gas to disengage. It forms salts with all the salifiable bases.

Incomp. Subst. Nitrate of silver produces with it a white precipitate, insoluble in water.

Prep. It is obtained by the decomposition of sea-salt, by sulphuric acid, and with the assistance of heat, and by receiving the gas resulting from this operation, into water until complete saturation.

Th. E. It possesses the same properties as nitric acid, but its unpleasant aftertaste renders it less suitable for internal use; however, in a very diluted state, it is exhibited in typhoid fevers, and in certain cutaneous affections. It is administered in aphthous and gangrenous ulcers of the throat. It is used externally in lotions as a stimulant, in certain bad ulcers, in cutaneous diseases, and as an injection in chronic blennorrhagia.

D. & M. of Adm. *Internally. Muriatic lemonade.* (℥ss. to ℥i. to ℔ij. of water.)——*Acidulated decoction of Barley.* (Hydro-chloric acid, ℥j.; decoction of barley, ℔j. simple syrup, q. s.)——*Acidum muriaticum dilutum,* D. (Hydro-chloric acid and distilled water, āā. equal parts in weight.)——*Alcoholized muriatic acid,* P. (Hydro-chloric acid, 1 part; alcohol, 3 parts.) Dose, ℈j. to ℥ss. in a mixture.——*Muriatic oxymel.* (Hydro-chloric acid, 1 part; honey, 2 parts.) Dose, ℥j. to iv.

Externally. Lotions, ℥iv. to ℔j. of water.—Injections, gut. viij. to x. in ℥iv. of water.—Gargles, ℥ss. to ij. to ℥viij. of a vehicle.——*Muriatic gargle,* Paris H. (Hydro-chloric acid, gut. xviij.; infusion of Peruvian bark, ℥iv.; syrup of honey, ℥j.)——*Detersive gargle,* Paris H. (Hydro-chloric acid, ℥ij.; decoction of barley, ℔j.; honey of roses, ℥j.)——*Pediluvium.* (Muriatic acid, ℥j. to ℥ij. to a sufficient quantity of water.)

Chlorine. *Chlorina.* Oximuriatic acid. Oxigenated muriatic acid. It is found in nature only in combination with other substances.

P. P. Gas of a greenish-yellow colour, of an astringent and unpleasant taste, of a suffocating smell, and of a specific gravity of 2.4216. Liquid chlorine or saturated solution of this gas in water, possesses the same properties.

C. P. Chlorine is a simple body, soluble in one and a half its volume of water, at 20° Centig. (68° Fahr.) under a pressure of about thirty inches. It has a great affinity for hydrogen, which it attracts from most of the substances containing it. Caloric and light act upon liquid or simply moist chlorine, and form a hydrochloric acid, by the almost instantaneous combination of this body with the hydrogen of the water. The dry chlorine may be liquified by a considerable degree of cold acting simultaneously with a very strong pressure; but if it is moist it congeals below 0° Centig. (32° Fahr.) This gas combines easily with most of the simple bodies and metals; with some, through the agency of heat

and with others while cold. These combinations form the chlorides. Finally, it destroys almost every vegetable colour, which property renders it useful in the art of bleaching.

Prep. This gas is produced by heating in a retort a mixture of four parts of common salt, one of peroxide of manganese, two of sulphuric acid, and two of water, and receiving the gas in water. Thus we obtain the liquid chlorine, which requires to be preserved in a dark place where light can have no access, and in well-stopped bottles.

Incomp. Subst. Nitrate of silver, gelatin, &c.

Th. E. Chlorine gas, if inhaled pure, causes sudden death; mixed with atmospheric air it irritates violently the bronchiæ, produces cough, &c. Applied to the skin, by means of a peculiar apparatus proposed by Dr. W. Wallace, either pure or mixed with steam, it possesses a very energetic stimulant action. Under the influence of this application, the skin, after a few minutes, becomes the seat of a very lively pricking, of prurigo, and of an abundant perspiration, which continues for some time after coming out of the bath; the body is afterwards covered with very small pustules, more or less confluent, and if the application of chlorine be continued for too long a time, it produces a violent pain, redness, and all the symptoms of erysipelas. As to its general action, Dr. Wallace thinks that it acts more especially on the liver, of which it increases the secretions. The concentrated liquid chlorine acts internally as well as externally, in the same manner as the mineral acids; diluted with water, it acts only as an excitant, and may be used like hydro-chloric acid.

Chlorine gas is very little used except for destroying the putrid miasma, and in order to purify the air in hospitals, jails, ships, and wherever a number of persons are crowded together. However, Dr. Wallace, whom we have just mentioned, proposes the employment of baths of this gas in the treatment of all chronic affections of the liver, when there is no indication of inflammatory symptoms, and he asserts that he had obtained great advantages from them.

In the liquid and concentrated state, this remedy has been used very successfully by Dr. Alibert, in several herpetic eruptions. Diluted with water it has been administered in typhoid fevers, in scurvy, in several cutaneous phlegmasiæ complicated with ataxic symptoms, certain chronic diarrhœæ, in some diseases of the skin, &c. In the form of gargle, it has proved useful in angina maligna, in aphthæ, ulcerations of the throat, and finally, according to Cluzel and Thénard, the immersion of the hands into this liquid, and lotions of the affected part, have been found a very successful and prompt remedy in the most stubborn psoric affections.

D. & M. of Adm. *Internally.* Liquid chlorine, ʒj. to iv. in ʒviij. of a vehicle. Same doses employed as a gargle.

Externally. Caustic and stimulant lotion, Alibert. (Liquid chlorine, 2 parts; water, 1 part.) It is applied by means of the feather of a quill or a roll of lint. The part is washed afterwards with tepid water in the gaseous state.——*Guytonnian fumigations,* P. (Hydro-chlorate of soda, 7 parts; oxide of manganese, 1; water and sulphuric acid, āā. 4.)——*Baths of chlorine gas,* Dr. W. Wallace. (By introducing the gas in a fumigatory apparatus, in the form of a box, perfectly air-tight, so as to prevent the patient from inhaling the gas.

Chloride of Lime. *Calcis oxi-murias.* Oxi-muriate of lime. Tennant's powder. This compound does not exist in nature; it is always the product of art.

P. P. Coarse powder, sometimes agglomerated, of a grayish white, of a sharp taste, and strong smell of chlorine.

C. P. This compound is partly soluble in water; the undissolved part, which precipitates, is an hydrate of lime. Exposed to the air it loses some of its chlorine. Caloric changes it into a chloride of calcium. Like chlorine, it has the property of distroying vegetable colours, and the acids disengage the chlorine from it.

Prep. It is obtained by introducing a current of chlorine gas into an air-tight vessel containing some slacken lime, and continuing the operation until the lime ceases to absorb the chlorine.

Chloride of lime, like chlorine itself, has the remarkable property of decomposing putrid miasmata. Mr. Mazurier was the first who offered it as a means of disinfecting the encumbered rooms of hospitals; but to Labarraque we are indebted for the application, on a large scale, of this method to every branch of manufacture or other business in which animal matter in putrefaction is used, and especially to the gut-spinning business. It is commonly used at present, and with the greatest advantage, for washing dissecting rooms, putrified subjects which are to be opened, and in order to prevent the bad smell of privies. It has likewise been employed as a wash in sordid and offensive ulcers, and in wounds complicated with hospital gangrene, to large and superficial burns when the inflammation has subsided; and finally, we have used it with full success in cases of ulceration of the pituitary membrane, entertained by a necrosis of the bones of the roof of the mouth. With this substance we not only destroy the offensive breath of the patient, but we believe this remedy has even accelerated the separation of the part of the bone affected with necrosis, and the cicatrization of the ulcerations of the pituitary membrane and of the soft palate. Dr. Lisfranc employs it in order to subdue chilblains, whether in the state of ulceration or not, and has cured them by this means in a very short time.

Chloride of lime, in these cases, acts in two ways, by neutral-

izing the bad smell and stimulating pretty powerfully the parts to which it is applied. Thus it may be readily conceived that its employment may be advantageous under many circumstances.

D. & M. of Adm. As disinfecting, applied to general uses. *Liquid chloride of lime.* (Chloride of lime, 1; water, 10.) For surgical uses, the above solution is diluted with four or five times its weight of water, and even more, according to the state of the parts to which it is to be applied. It is then used in lotions, fomentations, injections, gargles, &c.

Chloride of Soda. *Sodæ oxi-murias.* Labarraque's liquor. It is always the product of art.

P. P. Colourless liquid, sometimes of a light pink colour, diaphanous, soapy to the touch, of a slight odour of chlorine, and of a sharp and salt taste.

C. P. Exposed to the air and heat, it emits a considerable quantity of chlorine; acids decompose it, and disengage chlorine; it forms a white precipitate with nitrate of silver, and when pure it is not rendered turbid by oxalate of ammonia. Like the preceding article, it destroys vegetable colours.

Prep. Mr. Payen prepares it on a large scale, by treating the dry chloride of lime with a strong solution of sub-carbonate of soda in very pure water. Mr. Labarraque obtains it by introducing a current of chlorine gas into a strong solution of sub-carbonate of soda, marking 12° of the areometer, until a part of the liquid, thus obtained, discolours eighteen parts of sulphate of indigo.

Th. E. Chloride of soda possesses the same disinfecting properties as that of lime, and may be employed for the same purposes; but the chloride of lime is preferred to this article on account of its more moderate price; however, for surgical uses, that of soda is employed in preference.

Dr. Segalas' experiments prove that the chloride of soda, besides its powerful stimulating action upon the parts with which it comes in contact, is capable of exercising another very manifest one on the general economy, in consequence of its absorption. It then acts as an irritant, and may produce serious accidents; it requires, therefore, the greatest attention in its application upon the denuded tissues.

Properly diluted with water, it is employed with great success in the treatment of obstinate and sordid atonic ulcers, of hospital gangrene, of degenerated syphilitic ulcers, of gangrene and gangrenous tumours, such as pustula maligna, of ulcerated cancers, those even of the womb, &c. In all these cases, the offensive smell is instantaneously destroyed; and besides, by the lively excitation this remedy produces, it assists singularly the cicatrization of the ulcers. Finally, Mr. Labarraque has used it once with success in a case of asphyxia, produced by the gas arising

from privies, by placing in the nostrils and mouth of the patient a piece of linen soaked with concentrated chloride of soda.

D. & M. of Adm. In lotions, baths, fomentations, applications by means of lint, ℥j. of chloride of soda, diluted with, from two to nine ounces of water, according to the parts to which it is intended to be applied. As an injection in cancer of the uterus, ℥j. to ℔j. of water.

Chloride of Potassa. Javelle's water, possesses almost the same properties, and may, in most cases, be a substitute for chloride of soda. But this very irritating liquid, ought to be diluted with a considerable quantity of water.

Acidulous or Gaseous Mineral Waters.

These waters are limpid and colourless; they have an acidulous and fresh taste, a sharp, but very weak smell. They redden the tincture of litmus and form with lime water a flaky precipitate. To the presence of carbonic acid, they are indebted for most of their properties. They very often contain five or six times their volume of that gas; thus when they are agitated or heated, a great number of bubbles escape. Salts are also found in them, such as carbonates, hydro-chlorates and sulphates of lime, of soda and of magnesia, but in too small quantities to render them purgative; a certain number of these salts, insoluble in water, are kept in solution in them by carbonic acid; indeed, by the disengagement of this gas, these waters lose their transparency and a whitish precipitate is formed, more or less abundant, of carbonate of lime or of magnesia.

The springs of gaseous mineral waters are either cold or thermal. The former are cooling, quench thirst, excite slightly the organs of digestion, increase in a remarkable manner the secretion of urine; but they react promptly on the brain. In fact, their use often causes giddiness, a slight inebriation, and even cephalalgia, agitation, syncope, &c. The thermal waters are more stimulating. It appears therefore, that these mineral waters act on the digestive canal like temperants; but the influence they exercise on the nervous system, is evidently of a stimulating nature.

The cold gaseous waters are exhibited with success in small quantities, as cooling drinks, in cases of slight inflammation of the digestive organs; in larger doses, they succeeded in a great number of chronic diseases and especially in those proceeding from the atony of the stomach. They are employed advantageously in nervous affections, hypochondriasis, chlorosis, amenorrhœa, calculous affections, chronic catarrhs, obstructions of the liver, &c. The thermal waters of this class, are very useful, es-

pecially as baths, in diseases of the skin, rheumatic and arthritic affections, white swelling, and other diseases of this nature.

The principal springs of acidulous or gaseous mineral waters in this country, England and in France, are the following:—

[Thermal Waters. Lebanon Spring. This is a spot beautified both by nature and art, twenty-six miles east from Albany, and about two miles east from the village of New Lebanon, which is itself situated in a little valley, surrounded by fine hills and on the side of one of these hills, is the fountain, from which issues the clear and warm water, which although possessed of no strong mineral properties, has nevertheless given to this place its celebrity. The waters of this spring are abundant, and much esteemed for bathing, always keeping the temperature of 72° Fahr. It resembles very much the Buxton water in England, although less warm. The waters of Bristol, England, are another instance of tepid waters being almost entirely without mineral properties. The present fountain scarcely possesses any medicinal virtues, as may be seen by its contents below and as stated in Dr. Meade's analysis.

Two quarts of the water contain muriate of lime, gr. 1; muriate of soda, 1¾; sulphate of lime, 1½; carbonate of lime, ¾; nitrogen gas, 13 cubic inches; atmospheric air, 8.]

[Bedford Limestone Spring. The water of this fountain, which issues from the fissures in a limestone rock, is a pure limestone water. Its temperature, 51° Fahr. the thermometer being at 70°. There is also a *sweet spring*, the water of which is as pure as distilled water, with the exception of the carbonic acid it contains, and which may be easily expelled from the water by boiling it. See Bedford mineral springs.]

[Bath, *Great Britain*. Thermal Waters.* Bath is a very mild climate, and is the most generally frequented in England. This city is situated on the banks of the Avon. There are four public baths. The temperature of the water of Bath, is the highest of all the springs in England, and is from 112° to 116°, Fahr.

According to Dr. Scudamore's and Mr. Garden's analysis of the King's Bath, a pint of this water contains the following solid and gaseous proportions.

Muriate of lime, 1.2 grs.; muriate of magnesia, 1.6; sulphate of lime, 9.5; sulphate of soda, 0.9; oxide of iron, 0.01985; carbonic acid 1.2 cubic inches.

* [See on the subject of baths and mineral waters, Dr. J. Bell's very instructive and learned essay, published in the eighth and ninth volumes of the Journal of Medical and Physical Sciences of Dr. Chapman.]

These waters are taken internally or used for bathing; and as to their efficacy in various affections, it is by some ascribed more to their high temperature than to their stimulating properties as chalybeates.]

[Buxton. Thermal Waters. Buxton is a small town in Derbyshire. Its warm springs used for bathing, have given to it all its celebrity. The water issues through many fissures, and its temperature is 82° as it emerges from the earth; but in the basin the temperature is 77°. It is clear, colourless, inodorous, and tasteless, and does not become turbid by exposure to the air.

According to Dr. Scudamore, one gallon of water contains muriate of magnesia, 0.58 grs.; muriate of soda, 2.40; sulphate of lime, 0.60; carbonate of lime, 10.40; extractive matter and vegetable fibres, 0.50; loss, 0.52; carbonic acid gas, 1.50 cubic inches; and nitrogen 4.64.]

[Bristol Hot Well, *England.* This spring is situated one mile from Bristol, in the midst of a beautiful and romantic scenery, adorned by the river *Avon*, which gently meanders in the midst of it. The temperature of this water is only 74° Fahr. although the name of this fountain would indicate a very high temperature. This water is clear, tepid and very copious. When fresh drawn, it is inodorous, perfectly limpid, sparkling, rather agreeable and without any decided taste. It is used entirely as a drink.

Dr. Carrick on analysis, has found this water to contain the following articles in one gallon: carbonate of lime, 13.5 grs.; sulphate of lime, 11.75; sulphate of soda, 11.25; muriate of soda, 4.00; muriate of magnesia, 7.25; and carbonic acid gas, 30 cubic inches.]

Mont-D'Or, a village of the department of Puy-de-Dôme, near Clermont-Ferrand. There are four principal springs very near each other, viz. *St. Marguerite's* spring, the temperature of which, is from 10° to 12° (50° to 54° Fahr.;) the *grand bain*, (large bath) the waters of which, unctuous to the touch and of a sweetish taste, have a temperature of 43°, (110° Fahr.) The *bains de César*, (Cæsar's baths,) the temperature of which is 45°, (113° Fahr.) and finally, the spring of *La Magdelaine*, the waters of which possess at first an acidulous and afterwards a salt taste, and a temperature of about 42°, (108° Fahr.) The waters of the *grand bain* contain, according to Mr. Bertrand, in 26 litres, carbonic acid, grs. 65; carbonate of soda, 200; carbonate of lime, 138; carbonate of magnesia, 47; muriate of soda, 147; sulphate of soda, 50; alumine, 39; silica, 30; oxide of iron, 4. The waters

of the other springs contain the same substance, but the proportions differ slightly.

Artificial water of Mont d'or. TRYAIRE. Water charged with five times its volume of carbonic acid, ℥xx.; carbonate of soda, ℈ij.; hydrochlorate of soda, ℈j.; sulphate of iron, gr. j.

D. & M. OF ADM. As a drink, from two to five tumblers, in the morning, pure or mixed with milk or any other drink; and as baths, lotions, fomentations, shower baths, &c.

VICHY, a small town in the department of Allier, in a charming valley, possesses seven mineral springs, the principal of which is called *grande grille.* Its temperature is of 38.5°, (102° Fahr.) Its waters are slightly turbid, of an acidulous and afterwards alkaline taste. According to Mr. Longchamps, 1000 grammes of this water contains, simple water, 992.-552; free carbonic acid, 0.933; saturated carbonate of soda, 4.971; ditto of lime, 0,349; ditto of magnesia, 0.084; ditto of iron, 0.012; hydrochlorate of soda, 0.570; sulphate of soda, 0.472; silica, 0.073, and a small portion of vegeto-animal matter. Those of the other springs contain the same principles, and in very nearly the same proportions.

Vichy artificial water, P. Water containing twice its volume of carbonic acid, 650; sub-carbonate of soda, 1.6; muriate of soda, 0.2; sulphate of soda, 0.8; sub-carbonate of magnesia, 0.025; muriate of iron, 0.0125.

D. &. M. OF ADM. As a drink, from two to five tumblers of water, pure or mixed with any other drink, every morning; in baths, mixed with one-half, or two-thirds of common water, lotions, fomentations, and shower-baths.

SELTZ OR SELTERS, small town of the department of Bas-Rhin, several leagues from Strasbourg, possesses a single cold spring, the medicinal water of which is composed, according to Bergmann, of carbonic acid, 60 cubic inches; muriate of soda, 109.5 grains; carbonate of magnesia, 29; ditto of lime, 17; ditto of soda, 24; in litres 2.75 of water—about five pints of water.

Seltz artificial mineral water, P. Water charged with five times its volume of carbonic acid, 650; sub-carbonate of soda, 0.2; ditto magnesia, 0.1; muriate of soda, 1.2.

D. & M. OF ADM. As a drink, one or two litres a day, alone or mixed with wine, at meals; its use is now very common.

The other principal springs of acidulous waters in France are SAINT-MYON, PONGUES, CHATELDON, BAR, USSAT, &c.

General Stimulants furnished by the Vegetable Kingdom.

Family Laurineæ.

Cinnamon. *Cortex cinnamomi. Laurus cinnamomum*, Lin. A tree growing in the island of Ceylon, and different parts of the East Indies. P. U. The bark deprived of its epidermis.

B. C. Trunk twenty-five to thirty feet high; bark grayish outside, red inside; leaves irregularly opposite, acute, tough, smooth, green on one side, and glaucous on the other; flowers yellowish, in a loose and axillary panicle; calix pubescent, with six divisions; male flowers, nine stamina, forming several rows; female flowers ovoid, terminated by a thick style; stigma capitulate; fruit ovoid, resembling an acorn.

P. P. We distinguish in commerce several species of cinnamon, the principal of which are:—

The *Ceylon cinnamon*, which is the most esteemed, is in extremely thin and light slips, curled the one over the other, so as to form small, narrow and long tubes. It is very brittle, of a fibrous texture, and of a reddish-yellow colour; its odour is very aromatic, its taste warm, pungent, and sweet; its aftertaste is unpleasant. A variety of Ceylon cinnamon, inferior to that we have just spoken of, and called *common cinnamon*, is produced by the large branches and trunk of the cinnamon tree, whilst the former is exclusively furnished by the very young branches. It is in flat, thick, and large pieces of a reddish-yellow colour, of a fibrous fracture, of an odour and taste similar to those of the best cinnamon, but rather weaker.

The *Cayenne cinnamon* is generally thicker than that of Ceylon, of which it has, however, the odour and taste; it differs from it only by its being paler.

Finally, the *Chinese cinnamon*, which is of an inferior quality, is in shorter and thicker fragments, of a red-brown colour, of a smell similar to that of bed-bugs, of a warm taste, leaving a bitter and disagreeable impression.

C. P. Cinnamon contains, according to Vauquelin, a very acrid and strong volatile oil of a yellow colour and heavier than water; a great deal of tannin, a colouring matter containing nitrogen, an acid, a mucilage, and some fecula. In the Ceylon and Cayenne cinnamon, these proximate principles are found in very nearly the same proportions; but the Chinese contains a more considerable quantity of essential oil; water and alcohol take up the active principles of cinnamon.

Prep. To obtain the best cinnamon, the young branches of the cinnamon tree are cut down, the epidermis scraped off, then the bark is peeled off, cut in pieces, the smaller of which are inserted

in the larger pieces, and thus they are spread out to dry in the sun. They procure the inferior quality by stripping the trees of their epidermis, removing the bark in slips and drying it quickly in the sun. The trunk thus stripped perishes, but it is cut down, and the root produces new shoots, fit in a few years to yield good bark. In general, the trees must be five years old to furnish the best cinnamon.

Th. E. Cinnamon is a powerful stimulant, which, in small doses, induces a sensation of heat in the epigastric region, and increases the digestive functions; it produces afterwards costiveness in a secondary manner and acts as a stimulant on the whole economy, principally when it is exhibited in considerable quantities. This substance is seldom employed alone, but in conjunction with other tonic and stimulating substances; it may be prescribed with advantage in cases of atony of the stomach, of old diarrhœa, and likewise in the last period of adynamic and ataxic fevers. When the digestive canal is in a state to give us apprehensions, that it might induce an irritation on this organ, if it were administered internally, Dr. Barbier has often used the tincture of cinnamon with advantage in such cases, in frictions made on the epigastrium. This remedial substance has been recommended in cases of vomiting, which are not produced by an organic lesion of the stomach. Finally, it is frequently employed in order to conceal the odour or taste of other remedies.

D. & M. of Adm. Powder, gr. xii. to ℥j.——*Pulvis aromaticus*, U. S., E. (Cinnamon, lesser cardamom, ginger, āā. equal parts.)—D. (Same proportions with the addition of long pepper.)——*Pulvis cinnamomi compositus*, L. (Cinnamon, ℥ij.; cardamom, ℥jss.; ginger root, ℥j.; long pepper, ℥ss.)—Pr., F. (Cinnamon, 2 parts; cardamom, ginger, and white pepper, āā. one part.)—P. (Cinnamon and cardamom, āā. four parts; ginger and cloves, āā. one part.) Dose, from eight to twenty grains.——*Electuarium aromaticum*, E. (Aromatic powder, 1 part; syrup of orange peel, 2 parts.)——*Confectio aromatica*, L. (Cinnamon, nutmegs, saffron, āā. ℥ij.; cloves, ℥j.; cardamom seed, ℥ss.; prepared oyster shells, ℥xvj.; refined sugar, ℔ij.; water, Oj.)—D. (Very nearly the same ingredients and proportions.) Dose, from gr. xij. to ℥j.——*Infusion*, in close vessels, ℥ss. to ℥ij. to two pounds of water.——*Aqua cinnamomi*. Dose, from one to two ounces and more, in a mixture.——*Aqua cinnamomi vinosa*, Pol., Pr., F. (Cinnamon, 1 part; alcohol, 2 parts; water, a sufficient quantity.)——*Aqua cinnamomi cum vino*, R. (Cinnamon, 2 parts; white wine, 2; water, 10.) Dose, from ℥iv. to ℥j.

Tinctura cinnamomi, U. S. (Cinnamon, ℥iij.; diluted alcohol, Oijss.)—L., E. (Cinnamon, ℥iij.; (D. ℥iijss.) proof spirit, Oij.)—P., Pr., Pol., Den., F., A. (Cinnamon, 1 part; alcohol, from 4 to 6.) Dose, from ℥j. to ℥j. in a mixture.——*Tinctura cinnamomi composita*, L., D. (Cinnamon, ℥vj.; cardamom, ℥iij.; long pepper and ginger root, āā. ℥ij.; proof spirit, Oij.)—E. (Cinnamon and cardamom seeds, āā. ℥j.; long pepper, ℥ij.; proof spirit, ℔ijss.)——*Tinctura aromatica*, P. (Cinnamon, cloves and nutmegs, āā. 4 parts; pomegrenate tree flowers, 3; alcohol, 128.)—Pr., F., Den., Pol. (Cinnamon, 4; cardamom, cloves, galangal and ginger, āā. 1 part; alcohol, 48 parts.)

Syrupus cinnamomi, P. (Cinnamon water, 1 part; sugar, 2 parts.)—Pol., Pr. (Cinnamon bark and rose water, āā. 1 part; cinnamon water, 6 parts; sugar, 9

parts.)——*Essential oil.* Dose, from one to six drops.——*Oleo-saccharum cinnamomi*, P. (Oil of cinnamon, gut. ij.; sugar, ʒij.)——*Elæo-saccharum cinnamomi*, A., Pr. (Oil of cinnamon, 5 parts; sugar, 20 parts.)

Cassia Lignea. Malabar Cinnamon. *Cassiæ lignea cortex* is furnished by the *Laurus cassia*, Lin., a tree nearly related to the preceding. This bark is thick, in straight and cylindric tubes, of a brown colour, of a taste similar to that of cinnamon, but fainter, viscous and slightly bitter; its odour is likewise less aromatic. It is employed in the same cases, but its action is much weaker.

Clove Bark or Culilawan Bark, *Cortex lauri culilawan*, is furnished by a tree of the Molucca Islands. It is in pieces more or less long, almost flat, thick, fibrous, covered with a white epidermis, of a reddish-yellow inside, of a nutmeg and clove odour, and of an aromatic and sharp taste. It is another substitute for cinnamon, but not much used.

We find also in commerce, under the name of clove-bark, another bark furnished by the *Myrthus caryophillata*, Lin. It is in sticks two feet long, formed of several pieces of very thin and hard bark, rolled up one over the other, of a deep brown colour, of a taste similar to that of cloves. It possesses the same properties as the latter barks, and may be considered as a substitute for them.

The leaves of the Bay Tree, Apollo's Laurel, *Laurus nobilis*, a tree cultivated in Europe and America, have an aromatic smell, a bitter and sharp taste, and contain a very active brown volatile oil. The leaves are used principally for culinary purposes. A fatty, greenish oil, of the consistence of butter, is obtained from the fruit, and used occasionally in embrocations.

Family Meliaceæ.

Canella Alba. *False Winter's bark. Winteriana canella*, Lin. A tree growing in Jamaica. P. U. The bark.

B. C. Trunk from twenty to thirty feet high; leaves almost sessile, oval, of a light green, and shining; flowers in terminal clusters; calix concave, with three divisions; ten stamina; anthers elongate, with two contiguous cells; fruit, a globular berry, containing two or three seeds.

P. P. Thin bark, in scales five or six inches long, smooth, without epidermis, and curled up; externally, of a slight reddish-yellow colour, of a spongy texture; of a lighter and slightly grayish colour; internally, of a bitter and sharp taste, and of a very pleasant aromatic smell.

C. P. It contains a peculiar bitter matter, very soluble in alco-

hol and ether, but slightly so in water, a crystallizable saccharine principle, some resin, a very acrid essential oil, some gum, &c. It does not contain tannin as Winter's bark.

Th. E. Its action upon the economy is similar to that of the Ceylon cinnamon. It is principally used as a condiment, but it enters also into the composition of several pharmaceutical preparations. It has been administered in America with much effect in scorbutic diseases.

D. & M. of Adm. The same as those of cinnamon.

Family Euphorbiaceæ.

Cascarilla. *Cascarillæ cortex. Croton cascarilla*, Lin. (*C. Elutheriæ*, Edinburgh.) A shrub growing in Paraguay and Peru. P. U. The bark.

B. C. Stem from five to six feet high, divided in numerous branches; leaves alternate, lanceolate, waved on their margin; flowers greenish, small, monoicous, disposed in spikes; calix double; male flowers, from twelve to fifteen stamina, five glands fixed in the centre; female flowers with a trilocular ovary; fruit three-celled.

P. P. Fragments more or less curled up, furnished with a whitish epidermis, covered with lichens; of a brown colour inside; of a close, smooth, and resinous fracture; of a slightly bitter, aromatic and acrid taste, and of a musk-like odour, especially when burning.

C. P. This bark contains, according to Tromsdorff, an extractive bitter matter, a very fragrant essential oil of a greenish colour, and a resinous substance. Water and alcohol dissolve only a part of its active principles.

Incomp. Subst. Lime-water, infusions of gall-nuts and bark, sulphates of iron and zinc.

Th. E. Administered in small doses, cascarilla acts on the stomach in the same manner as tonics; in larger quantities, its stimulating action influences all the economy, as is evinced by the diaphoresis and acceleration of the pulse, &c. It is used with much success in cases of atony of the digestive canal, in dyspepsia, dysentery, and chronic diarrhœa. It has been highly recommended as a febrifuge; but it has been ascertained that alone it very often failed in the treatment of intermittent fevers. On the contrary, it succeeds well in conjunction with bark, and seems to render the action of this substance more certain and more prompt. Indeed, it is most commonly administered mixed in this way.

D. & M. of Adm. *Powder*, from gr. x. to ʒss.—*Infusion*, from ʒij. to ℥j. to a pound of water.——*Infusum cascarillæ*, U. S., L. (Cascarilla, ℥j.; boiling water, Oss.) Dose, from ʒj. to ʒiij.——*Tinctura cascarillæ*, L., D., P., B. (Cascarilla, ʒij.; alcohol, Oj.)—Den., Pol., F. (Cascarilla, 1 part; alcohol, 3 parts.)

——*Tinctura crotonis elutheriæ*, E. (Cascarilla, ℥iv.; boiling water, ℔ijss.)—— *Extractum cascarillæ*, D., Pr., Den., A., B., Pol. Dose, from gr. xij. to ʒj.—— *Distilled water of cascarilla*, P. From ʒij. to ℥ss. in a mixture.

Family Magnoliaceæ.

Winter's Bark. *Cortex Winteri. Drymis Winteri*, Lin. An evergreen tree which grows about the Straights of Magellan.

B. C. Stem from 10 to 40 feet high; leaves oval, scariose, green on the upper surface; whitish on the under surface; flowers small, three or four together at the extremity of the branches; calix with two or three deep divisions; corolla, six caducous petals; stamina numerous; anthers with two separate cells, from four to eight ovaries changing to polyspermous berries.

P. P. This bark, which is almost always mistaken in commerce for *Canella alba*, is in fragments rolled up, about one foot long, one inch broad, and two or three lines thick, rugged, of a brown-yellow colour, and sometimes covered on the outside with tuberculæ, of a light yellow colour inside, of a compact and reddish fracture, of a resinous and aromatic smell, of an acrid and burning taste.

C. P. It contains volatile oil, 1.2; resin, 10; tannin and colouring matter, 9; starch, 1.6; and saline substances. Water and alcohol take up its active principles.

Th. E. Winter's bark possesses very energetic stimulant properties, similar to those of the preceding substances; it is employed under the same circumstances. It has been highly recommended as a stomachic and anti-scorbutic, but it is now very little used.

D. & M. of Adm. Powder, from gr. v. to ʒss.—Infusion, from ʒj. to ℥ij. It enters the composition of several bitter and aromatic tinctures.

[Tulip-tree. White or American white poplar. *Liriodendron tulipifera*, Lin. A native tree of America, growing in almost all the extent of the United States. P. U. The bark.

B. C. This beautiful and noble tree rises sometimes to the height of 140 feet; its trunk is straight, and its branches regularly disposed; leaves large, three-lobed, with the central lobe truncated; flowers large, solitary, terminal, subcampanulate, variegated with yellow, orange, and lake-green colours; stamina about 36, disposed in a simple series; pistils numerous; germs disposed in the form of a cone; fruit conical, composed of numerous thin and imbricated scales.

P. P. Very bitter, slightly aromatic and astringent.

C. P. According to Dr. Roger's analysis, this bark contains gum, resin, muriatic acid, iron, calcareous salt, mucus, fecula, &c.

Th. E. This bark possesses very eminent stimulant properties, but it is chiefly on account of its tonic effects that it deserves our particular notice. In combination with the *Prinos verticillatus* and *Cornus florida*, it has afforded a remedy of equal efficacy with Peruvian bark. In the phthisis pulmonalis attended with

hectic fever, night sweats, and diarrhœa, it has frequently abated these alarming and troublesome symptoms, when administered in combination with laudanum. Dr. J. T. Young of Philadelphia, has used it in the same way in cases of hysteria, and says, that he can assert from experience, that there is not in all the materia medica a more certain, speedy and effectual cure for this disease than this combination: he adds, that for several years he has used no other remedy, in cholera infantum, than the bark of the tulip tree, and that he found it also in cases of worms a very effectual anthelmintic. It acts also occasionally as a diuretic, and in general it produces a very decided diaphoretic effect, when administered in large doses. The dose of this bark is from ʒss. to ʒij. in powder.]

BADIAN or STAR-ANISEED. *Anisum stellatum. Illicium anisatum*, Lin. A tree growing in China and Japan. P. U. The fruit.

B. C. Leaves in bunches at the top of the branches, green, tough, persistent, and very similar to those of the common laurel; flowers solitary, in the axilla of the leaves, yellowish, very sweet scented; calix scaly; corolla formed of numerous petals, disposed in several rows, twenty-five to thirty stamina; fruit, eight monospermous cells united together by their base, and forming a kind of star.

P. P. Capsules compressed, ovoid, rugose, of a reddish-brown, of an acrid, aromatic and sweetish taste, of an odour similar to that of aniseed, and each containing a brown seed, shining, fleshy, and oleaginous.

TH. E. This substance has not been analyzed. We only know that it contains an abundance of volatile oil,* to which it is indebted for its odour and taste. Its active principles are soluble in water and alcohol. The star-aniseed, which is used to flavour cordials, possesses stimulant properties, and is employed in the same cases as most aromatic seeds, called carminative. (See Aniseed.)

D. & M. OF ADM. Powder, gr. xij. to ʒj. and more.—Infusion, ʒj. to ʒij. to ℔ij. of water.

Family Orchideæ.

VANILLA. *Vanillæ fructus. Epidendrum vanilla*, Lin. A sarmentose shrub, growing in Mexico and Peru. P. U. The fruit.

B. C. Stem woody and climbing; leaves sessile, tough, fleshy, shining; flowers purple, large, four or five in a bunch; calix deciduous; anther terminal; fruit elongate, containing a fleshy pulp.

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* [This oil has been of late imported from the East Indies, and sold in our market for common oil of aniseed, to which it is very superior.]—AM. EDS.

P. P. Pods bivalve, from eight to ten inches long, two or three lines broad, flat, tough, of a blackish-brown colour, and containing numerous round seeds of the same colour, surrounded with a black pulp of a sweet and aromatic odour and of a very agreeable taste.

C. P. Vanilla contains a very active essential oil, some benzoic acid, and other principles. Water and alcohol dissolve the active parts.

Th. E. It is an active and very agreeable stimulant, which is commonly used to perfume chocolate. It seems to act in a decided manner on the organs of generation. It is employed as emmenagogue and aphrodisiac. It is useful in all the cases requiring the employment of stimulants.

D. & M. of Adm. *Powder*, from gr. xv. to ʒj.——*Infusion*, from ʒj. to ij. to ℔ij. of water.——*Syrup*, Alibert. (Vanilla, ʒij; white sugar, ʒxvii.; water, ʒix.)

Family Myristiceæ.

Nutmeg. *Nux moschata. Myristica moschata*, Thunberg. A tree growing in the *Molucca Islands*. P. U. The seed and its aril.

B. C. Trunk, thirty feet high, bushy. Leaves oval, lanceolate, entire, tough, of a deep green colour on the upper surface, whitish on the under surface. Flowers dioicous, from four to six united in the axilla of the leaves; male flowers, twelve stamina; female flowers, ovary ovoid, unilocular; fruit, a pyriform drupe containing an ovoid and hard seed.

P. P. Seed oblong or oval, of the size of a small walnut, hard, unctuous, heavy, of a gray colour with red veins externally; reddish internally, with deeper veins; of a peculiar odour, very sweet and strong, of a warm, sharp and very agreeable taste.

C. P. According to Bonastre, it contains stearine, 120; elaine, 38; a white volatile oil lighter than water, of an acrid and sharp taste, 30; acid, 4; fecula and gum, 18; lignous fibres, 290. A fixed concrete oil, of a reddish-yellow colour is obtained from it by expression, containing a little essential oil, to which it is indebted for its odour, and which is improperly called in the shops *oil of mace*. Alcohol and ether dissolve its active principles.

Th. E. It is a very energetic stimulant daily used for culinary purposes and as a perfume. Given in large doses, this substance seems to act principally on the nervous system; in fact, it produces vertigoes, stupor, drowsiness and general insensibility. In small doses, it is used with success in debility of the digestive functions, in certain diarrhœæ, and generally, whenever a strong excitation is necessary. Several practitioners employ it likewise externally in cases of palsy. Finally, it is often associated with

bitter substances, in order to facilitate their action, and it enters into the composition of numerous officinal compounds.

D. & M. of Adm. *Powder*, gr. x. to ℈j.——*Spiritus myristicæ*, L., E. (Nutmeg, ℥ij.; alcohol, Cj.; water, q. s.) ℥ss. to ℥j.; in a mixture.——*Essential oil*, P., R. Dose, from gut. ij. to iv.——*Fixed oil*, P., Den., Pr., Pol., externally in frictions.——*Nervine balsam*, P. (Fixed oil of nutmeg and beef marrow, āā. 32; essential oil of rosemary, Peruvian balsam, āā. 2; essential oil of cloves and camphor, āā. 1; alcohol, 4.) To use in frictions.

Mace. Aril of the fruit of the nutmeg tree, is a thick membrane, flexible, divided into narrow slips of a yellowish colour, of a smell analogous to that of nutmeg, of a warm, sharp, and at the same time fatty taste. It contains a good deal of essential oil, and some fixed oil; and although less active than the nutmeg, it is employed in the same cases, and manner. It enters also into the composition of many officinal preparations.

Family Myrtineæ.

Cloves. *Caryophylli. Caryophyllus aromaticus. Eugenia caryophyllata.* A shrub coming originally from the Molucca Islands. P. U. The unexpanded flowers.

B. C. Leaves opposite, oboval, smooth, persistent. Flowers of a pink colour, forming a terminal trichotomous corymb; calix elongate, infundibuliform, with four teeth; four petals; ovary unilocular, monospermous fruit, a dry ovoid drupe.

P. P. Cloves have the form of a small nail with a round head; which circumstance has caused them to be called by the French, *cloux de gérofle;* they are of a light brown colour, of an acrid and sharp taste, of a strong and agreeable aromatic smell.

C. P. Cloves contain, according to Tromsdorff, a large proportion of essential oil, heavier than water and excessively acrid, some tannin and gum. Mr. Lolibert has discovered in it a peculiar resinous matter, crystallizable, white satin-like, rough to the touch, inodorous and insipid, which he has called *caryophyllin.*

Incomp. Subst. Tartar emetic, sulphates of iron and zinc.

Th. E. This substance possesses in the highest degree the exciting properties of stimulants. It is daily used as a condiment. It is administered, in medicine, in the same cases as the preceding articles, and enters likewise into the composition of several officinal preparations. Its essential oil is used to cauterize the small nerves of decayed teeth; but besides, that it often fails to fulfil this object, it may sometimes produce the caries of the healthy teeth; its employment requires consequently great caution. This oil may be used likewise to rubify the skin.

D. & M. of Adm. Powder, gr. vj. to viij.——*Infusum caryophyllorum*, L. (Cloves, ℥j.; boiling water, Oss.) Dose, from ℥j. to ℥ij. two or three times a day.——*Distilled water*, P. Dose, from ℥j. to ℥ij. in a mixture.——*Tincture*, P. Dose, from ℥ss. to ℥j.——*Oleum caryophyllorum volatile*, P., Pr., A., R., Pol., Den. Dose, gut. ij. to iv., triturated with sugar.

Externally. In frictions, united with two parts of sweet oil.——*Emplastrum aromaticum*, Pr., Pol. (Cloves, 4; olibanum, 8; oil of nutmegs, 8; wax, 16; tallow, 12.)

PIMENTO, JAMAICA PEPPER OR ALL-SPICE. *Pimentæ baccæ. Myrthus pimenta*, Lin. A tree native of South America, cultivated in Jamaica. P. U. The fruit.

B. C. Trunk thirty feet high; leaves elliptical, entire, shining and of a deep green colour; flowers in trichotomous panicles, of a light yellow colour; fruit a globular berry, black, shining and bilocular.

P. P. Small globular berries, dry, wrinkled, of a dark colour, of an aromatic smell similar to a mixture of cloves, cinnamon and nutmeg, and moreover of a sharp and warm taste.

C. P. This substance contains a volatile oil of a green-yellow colour; a resin, of a sharp and nauseous taste; some extractive; tannin, and gallic acid. Water, alcohol and ether dissolve its active principles.

INCOMP. SUBST. Sulphate of iron, nitrate of iron, infusion of bark.

TH. E. Pimento is an energetic stimulant, which is generally used as a condiment. It is frequently employed with success, united with bitter substances, in dyspepsia attended with flatulency, in arthritic and old rheumatic affections. It is also exhibited advantageously in varioloid, measles, and malignant scarlatina, when the eruption is slow to appear, and when it is necessary to restore the strength of the patient. Finally, it may be substituted for the aromatic substances when their price is very high.

D. & M. OF ADM. Powder, gr. vj. to ℈j.——*Aquâ pimentæ*, L., E., D. (Pimento, ℔ss.; water, as much as necessary to distil one gallon.) Dose, from ʒj. to ʒij.——*Tinctura pimentæ acida*, B. (Alcohol, water, and sulphuric acid, āā. 5; pimento, 1.) Dose, from gut. x. to xx. in a mixture.——*Oleum pimentæ*, L., E., D. Gut. iij. to v. united with sugar or a proper vehicle.

Family Solanaceæ.

COCKSPUR PEPPER. CAYENNE PEPPER. *Capsici baccæ. Capsicum annuum*, Lin. Annual plant of the East and West Indies, and cultivated in Europe and North America.

B. C. Stem herbaceous and ramose; leaves lanceolate, entire, shining, supported by a long petiole; flowers white, small, axillary; fruit an elongated capsule, of a conic shape, shining, of a lively red, with two or three cells containing reniform, flat and yellowish seeds.

P. P. Capsule elongate, shining, red, wrinkled, containing a pulpous matter in which the seeds are lodged, of an aromatic smell, of an excessively acrid and warm taste.

C. P. Cayenne pepper contains a peculiar substance discovered by Forchhammer, and called *Capsicin* by Dr. C. Conwell; a red colouring matter, a small quantity of a matter containing nitrogen, a mucilage and some salts, especially nitrate of potassa. Dr. C. obtains, by means of ether, a liquid of a fine reddish-yellow colour, which he calls ethereal oil of capsicum, and which is eminently endowed with all the stimulant and acrid properties of the Cayenne pepper.

Incomp. Subst. The infusion of gall-nut, alum, ammonia, alkaline carbonates, sulphates of iron, copper, zinc, &c.

Th. E. Like the preceding articles, this substance possesses very powerful stimulant properties. Introduced in the stomach, it produces a sensation of heat, which is very soon extended to the whole economy, without, however, accelerating the pulse in any sensible manner. It is little used in France, excepting as condiment; but the American and English practitioners administer it with success in atonic affections of the stomach, in gout, in certain cases of dropsy, and especially in angina and malignant scarlet fever. They give it then internally, and principally in the form of gargle; they often associate it with the martial preparations. Finally, they exhibit it also as a very active rubefacient in cases requiring this sort of medication.

D. & M. of Adm. Powder, from gr. vj. to xij. in pills.——*Tinctura capsici*, U. S., L. (Cayenne pepper, ʒj.; diluted alcohol, Oij.) Dose, from ♏. xij. to f.ʒss.——*Stimulant gargle.* (Cayenne pepper, gr. vj.; boiling water, ʒiv.;—or tincture of Cayenne pepper, f.ʒij.; infusion of roses or any other vehicle, Oss.)

Externally. Tinctura capsici and cantharidum, U. S. (Cantharides, ʒx.; Cayenne pepper, ʒj.; diluted alcohol, Oj.) To use as rubefacient.

[Capsicin. According to Dr. Conwell, this substance, when perfectly pure, is tasteless, inodorous, and crystallizes in acicular fragments. After the first crystallization, it yet possesses some taste of the red pepper, derived from the oil which it loses by repeated crystallizations. This substance is neither acid nor alkaline; it is insoluble in cold, but partially soluble in hot water. Oils, alcohol and ether dissolve it; but these two last fluids take up a much larger quantity when they are hot. It is obtained conjointly with the ethereal oil.]

[Ethereal Oil of Capsicum. This oil possesses a most intolerable warmth and acrimony of taste, and concentrates all the stimulant properties of the pods. When applied to the skin of the hand, its action is immediately felt, and produces no redness. It is of a brilliant reddish-yellow colour, has a peculiar odour and aromatic taste, and cannot be distilled without undergoing decomposition. It is obtained by digesting for two weeks capsicum

pods in sulphuric ether, filtering the ethereal tincture, and leaving it to a spontaneous evaporation. As the ether falls, crops of crystals of capsicin, assuming curious dendroid forms, will be seen studded round the inside of the vessel; and after all the ether is dissipated, the warm aromatic or concentrated oil of capsicum will be found at the bottom.]

Family Piperineæ.

Black Pepper. *Fructus piperis nigri. Piper nigrum.* A shrub, native of the East Indies. P. U. The fruit.

B. C. Stem lignous, sarmentose; leaves alternate, oval, smooth, five or six inches long, by two in breadth; flowers hermaphrodite, small, greenish, in extra-axillary aments, slender and pendulous, four or five inches long; fruit, a globular berry with a single seed.

P. P. Berries of the size and form of an English pea, blackish, very wrinkled, of a well known aromatic smell and sharp taste.

C. P. Black pepper, according to Pelletier, contains a peculiar matter, discovered by Œrsted, and called *Piperin.* (See p. 182.) A very acrid concrete oil, a balsamic volatile oil to which it is indebted for its savour, a gummous matter, extractive, malic and tartaric acids, starch, bassorin, lignin, and a very small quantity of salts. The active principles are soluble in ether and alcohol, and partly so only in water.

Incomp. Subst. The infusion of gall.

Th. E. This substance, applied in a large quantity to the living tissues, produces a violent irritation, rubefaction, and even inflammation, when the contact is too protracted. Absorbed and carried into the mass of the blood, pepper acts as a very energetic general excitant, the action of which lasts for some time. It is most commonly used for culinary purposes; however, its very stimulating action may be exhibited with advantage, and it may be administered in small doses, alone, or rather combined with bitters, in cases of atony of the digestive organs, in arthritic affections attended with dyspepsia, and in obstinate intermittent fevers, in conjunction with bark. In India, it is very often administered in infusion to arrest cholera morbus; and, according to Dr. Ainslie, its exhibition succeeds very well in stopping vomiting. Pepper is also employed as a gargle, in the relaxation of the soft palate. Finally, it may be substituted with advantage for mustard as a rubefacient, and even as an epispastic application.

D. & M. of Adm. Powder, from gr. iv. to ℈j. and more gradually, in pills; entire grains, No. ij. to iv.——*Vinous infusion.* (Black pepper, ʒj.; white wine, ℔j.) Dose, three or four spoonfuls in the day.——*Rubefacient poultice,* P. (Pepper, fennel seed, āā. 16; torrefied and bruised barley, 128; white of eggs, q. s.; very strong vinegar, 32.)——*Unguentum piperis nigri,* D. (Pepper, ℥iv.; axungia, ℔j.)

White Pepper is nothing but the preceding article deprived, by maceration in water, of its black envelope.

Long Pepper, fruit of the *Piper longum*, Lin., is in spikes or catkins of the size of those of the birch-tree, dry, hard, heavy, tubercular, of a blackish-gray colour, of an odour less aromatic than that of black pepper, but of a burning taste. According to Dulong's experiments, it seems to be composed of the same principles as the latter substance. It is employed under the same circumstances, and in the same manner. It appears, however, to be less active.

Betel, fruit of the *Piper betel*, Lin., has a bitter and caustic taste and an aromatic smell. It seems to possess the same properties as the preceding articles. Its leaves, united with the areca nut and quicklime, are used in the preparation of a masticatory of this name, which is of general use in India.

Piperin. *Piperinum.* A proximate principle, discovered by Œrsted, in the black pepper.

P. P. Four-sided prismatic crystals, colourless, translucid, inodorous, and almost insipid.

C. P. This substance is not alkaline, as it had been at first thought. Pelletier has ascertained it to have a resinous character; insoluble in cold, and but slightly so in boiling water; it dissolves perfectly in alcohol, boiling ether, and in acetic acid, from which it is precipitated by water. The concentrated mineral acids decompose it; sulphuric acid strikes it a blood-red colour; nitric acid colours it greenish-yellow, which changes into an orange, and afterwards into a red colour; heated, it melts at a temperature of 100° Centig. (212° Fahr.) and above this heat it is decomposed, and gives all the products of vegetable substances.

Prep. By treating repeatedly the bruised pepper with alcohol, a resinous matter is obtained, which is subjected to the action of boiling water. Treat again with alcohol, and permit the solution to stand a few days; you will thus obtain crystals which may be purified by dissolving them again in alcohol or ether.

Dr. V. M. Meli performed, in the Hospital of Ravennes, a number of experiments on the action of piperin in the treatment of intermittent fevers. He asserts that he had obtained the most happy results from its administration. These observations, repeated and confirmed by several other Italian physicians, prove that this substance is endowed with febrifuge properties similar to those of the alkali contained in Peruvian bark, if they are not even more energetic.

[When piperin is entirely freed from the balsamic oil by repeat-

ed crystallizations, it is white, perfectly tasteless and inert. It is now ascertained that the properties of this article, as mentioned above, were altogether owing to the oil, which was combined with the piperin exhibited.]

[An Ethereal Oil of Black Pepper, has been lately introduced in the practice of medicine by Mr. George Carpenter, which contains all the aromatic warmth and acrimony of the substance from which it has been obtained. It is prepared by the same process as Dr. Conwell's ethereal oil of capsicum, and has been prescribed by several practitioners in conjunction with sulphate of quinine.

An Extract of Black Pepper, has also been prepared by Mr. Carpenter, and supposed to be a beneficial remedy in intermittent fevers, in doses of two or three grains; but it has not been as yet fairly tried.]

Cubebs. *Fructus piperis cubebæ. Piper cubebæ*, Lin. A shrub growing in the East Indies and Africa. P. U. The fruit.

B. C. Stem sarmentose, articulate; leaves petiolate, oval, tough; flowers, in elongate and pendulous spikes, furnished with a long pedicle; fruit, pisiform and blackish berries.

P. P. Berries blackish, wrinkled, larger than those of the black pepper, and furnished with their pedicle; containing a yellow almond, hard and covered with a brown epidermis, of an aromatic smell, of a warm, bitter and sharp taste, however, not so strong as that of black pepper.

C. P. This substance contains, according to Mr. Vauquelin, an almost concrete volatile oil, a resin similar to that of the copaiba, which has a great analogy to piperin, another coloured resin, gum, an extractive principle, and some salts, especially according to Tromsdorff, some acetate of potassa.

Th. E. Cubebs have the same stimulant properties as the other substances of the same genus, we have just investigated; but in a less degree. It seems to act in an especial manner on the mucous membranes, and principally on those of the genito-urinary organs. Indeed, it has been administered with success, for several years past, in the treatment of acute and chronic inflammations of the urethra and vagina. Dr. J. Crawford was the first, who made known the advantages derived from their employment in many cases in which they were used in Java; a great many American and English physicians; and in France Drs. Dupuytren, Delpech, Cullerier, &c., have tried this method, and have derived the greatest advantages from its administration even

in very acute cases. Dr. Velpeau, in a memoir, just published, recommends their administration as an enema, and he mentions, in support of this opinion, several instances of very successful cures. Dr. W. Chevallier, has exhibited this article with success in chronic blennorrhœa, as an injection made with a strong infusion of this substance.

D. & M. of Adm. Powder, ʒss. to ʒij., two or three times a day, in a syrup or mucilage of gum Arabic. In enema, ʒiv. to ℥j. and more, in ℥vi. of decoction of marsh mallow.——*Injection for blennorrhœa*, W. Chevallier. (Cubebs, ℥j.; extract of belladonna, ℈j.; water, ℔j.) a. q.

Family Urticeæ.

Contrayerva. *Contrayervæ radix. Dorstenia contrayerva*, Lin. Perennial plant growing in Peru and Mexico. P. U. The root.

B. C. Leaves all radical, petiolate, large, slightly rough to the touch; flowers monoicous, white, united and contained in a plane receptacle; male flowers, two stamina; female flowers, one, unilocular ovary; fruit, a small bivalve capsule, supported by a pedicle five or six inches long.

P. P. A knotty and ovoid root, about two inches long, of the size of the finger, terminated by a curved point, furnished with numerous and hard radicles; externally of a reddish-brown, and whitish internally, of an aromatic odour, its taste is at first weak, and afterwards warm, bitter and acrid.

C. P. This substance has not been analyzed. We know only that its remedial principles are soluble in water and alcohol.

Incomp. Subst. A copious precipitate is produced on adding water to its alcoholic tincture.

Th. E. This plant was once considered as capable of neutralizing the poisonous bite of animals and deleterious miasma, and was consequently administered in cases of the bite of serpents and other venomous animals, in the plague, putrid fevers, &c. Now we know that it possesses very energetic stimulant properties, and that its action is felt by the skin and increases its secretion. It may consequently be administered in all the cases which require the exhibition of stimulants, and especially in atony of the digestive canal, in gout, obstinate diarrhœa, and in the affections complicated with adynamic symptoms. It is now very little used, and perhaps unjustly neglected, for its action is certainly very energetic.

D. & M. of Adm. *Powder*, from ℈j. to ʒj.——*Infusion*, in close vessels, from ʒij. to ʒiv. to ℔ij. of boiling water.——*Tincture*, P. ʒj. to ʒij. in a mixture.——*Pulvis contrayervæ compositus*, L. (Contrayerva, ℥v.; prepared oyster shells, ℔ss.) Dose, from gr. x. to xx.

[Water-eryngo. Button Wood. *Eryngium aquaticum*, Lin. A native plant belonging to the family *umbelliferæ*.

is nearly allied to the contrayerva of the shops, and acts more especially as a sudorific.]

Family Scitamineæ.

GINGER. *Gingiberis radix. Amomum zingiber.* A plant coming originally from the East Indies, and imported into Mexico and the West Indies, where it is cultivated. P. U. The root.

B. C. Stem cylindrical, leafy, about two feet high; leaves alternate, lanceolate, one inch wide by five or six long, terminated at the inferior part by a cleft sheath; flowers yellow, in an ovoid spike, supported on a scaly scape shooting from the side of the stem; anther cleft in two; style leaning in the furrow of the stamen; fruit, a smooth capsule containing several oblong seeds.

P. P. Tubercular root of the size of the finger, flat, knotty and palmated-like, hard, compact, covered with a grayish epidermis, white or yellowish internally, of an acrid and warm taste, provoking the secretion of saliva, of a very strong smell, *sui generis.*

C. P. This substance contains, according to Morin, a resin soluble in ether, a sub-resin insoluble in that menstruum, a volatile oil of a greenish-blue colour, a matter containing nitrogen, another matter analogous to osmazome, some acetic acid, acetate of potassa, starch, gum, lignous fibres, and salts. Water, alcohol and ether dissolve a part of its active principles.

TH. E. Ginger is an energetic stimulant like the substances mentioned above. It is generally used in India as a condiment. It is advantageously exhibited in dyspepsia, flatulent colics, and generally in all the cases in which it is necessary to promote the action of the digestive apparatus. It is frequently used in America and England, and is commonly associated with bitters to assist their action. It may likewise be used as masticatory to promote salivation, and strengthen the mucous membrane of the mouth.

This substance enters into the composition of numerous remedial compounds, as an adjuvant or as a corrective.

D. & M. OF ADM. Powder, from gr. vj. to ℈j.—Decoction, ʒj. to ʒss. to ℔ij. of water.——*Tinctura zingiberis*, L., E., D. (Ginger, ʒij.; alcohol, Oij.) Dose, from ʒj. to ʒij.——*Syrupus zingiberis*, U. S., E. (Ginger, ʒiij.; boiling water, Oiv.; sugar, ℔vijss.)—L. (Ginger, ʒij.; water, Oj.; sugar, ℔ij.)—D. (Ginger, ʒiv.; water, Oiij.; sugar, a sufficient quantity to make a syrup.)

SMALL CARDAMOM. *Cardamomum minus. Amomum cardamomum*, Lin. *Matonia cardamomum*, Maton. A perennial plant growing in the East Indies. P. U. The fruit.

B. C. Root stoloniferous, articulated; stem erect, from eight to ten feet high; leaves alternate, narrow, vaginant, one foot long; flowers, whitish, in irregular

clusters, supported by a scape raising from the root; calix double, the internal one with three divisions; anther double; fruit a three-sided capsule, with three cells containing several angular seeds.

P. P. Triangular capsules, somewhat rounded, from four to five lines in length, of a yellowish-white, containing angular seeds of a brown colour, of a pleasant aromatic smell, of a warm pepper-like taste, weaker however than that of the various peppers.

C. P. This substance has not been analyzed. We know only that it contains a great proportion of essential oil, to which it is indebted for its taste and odour; some fecula and mucilage. Water and alcohol especially take up its active principles.

Incomp. Subst. Acids, sulphate of iron and muriate of mercury.

Th. E. The stimulant properties of the small cardamom are less active than those of the black pepper. It is therefore employed in preference in those cases in which the too active influence of the latter might be hurtful, such as flatulent colics of children, in disturbed digestion of irritable persons, &c. This substance is very little used in France, although it enters into several officinal preparations; it is, on the contrary, very much employed in the United States and in England. It is commonly associated with bitter tinctures and with purgative medicines to assist their action, and prevent the colics and flatulence the latter are apt to produce.

D. & M. of Adm. Powder, from gr. vj. to ℈j.——*Tinctura cardamomi*, U. S., L., D., E. (Cardamom seeds, ℥iv.; diluted alcohol, Oijss.)——*Tinctura cardamomi composita*, L., D. (Cardamom, caraway seeds, āā. ℥ij.; cinnamon bark, ℥ss.; raisins, stoned, ℥iv.; proof spirit, Oij.) Both these tinctures are agreeable cordials, and are added to mixtures.

The Great and Middle Cardamoms, furnished by other species of *amomum*, but as yet unobserved, and undescribed, and which might be only varieties of the preceding, have a great resemblance with the small cardamom; they are however larger, and their properties are not so energetic.

Maleguetta. Maniguetta. Grains of Paradise. Fruit of a plant of the genus *Amomum*, which has not yet been described with accuracy.* It resembles fenugreek seed; its taste is acrid and warm. It enters into several officinal preparations.

Round Zedoary. *Zedoariæ rotundæ radix*, is the root of the *Kæmpferia rotunda*, Lin. A plant growing in the East

* [*Amomum granum paradisi*, Persoon. *Scapo ramoso, laxo, foliis ovatis*, habitat in Madagascar, Guinea, Ceylona.]—Am. Eds.

Indies. It is in fragments of the size of the half or fourth of a small hen's egg, the convex side of which is marked with circular rings. It is of a grayish-white, compact, resembling horn inside, of a bitter and camphorated taste, and of an odour approaching that of ginger, from which it does not seem to differ in its chemical composition. The LONG ZEDOARY, *Amomum Zedoaria*, Willd., has the same properties, and differs from the round only by its shape. Both these roots possess very energetic stimulant properties, but they are seldom used at present, except in compounding several officinal preparations.

We might say the same of the GALANGAL, *Galangæ majoris and minoris radix*, furnished by the *Maranta galanga*, Lin., a plant very nearly connected with those just mentioned, growing in India and cultivated in America. This root is cylindrical, of the size of the small finger, five or six inches long, often bifurcate, of a brown colour externally, marked by circular white lines, of a yellow-red internally, of a strong and aromatic odour, and of an acrid and sharp taste. Its chemical composition is nearly the same as that of ginger. It is very much used as a condiment in India and China.

CURCUMA. TURMERIC. *Radix curcumæ*, is the root of the *Curcuma longa*, Lin., a plant native of the East Indies. It is of the size of the finger, cylindrical, irregularly contorted, gray, and shagreen externally, compact internally, of a deep yellow colour, of a fracture similar to that of wax, of an odour and taste analogous to that of ginger. This substance contains an essential oil, a large quantity of yellow colouring matter, soluble in alcohol, and used as a very delicate test for the presence of alkalies, by which it is changed to a deep red. Turmeric is scarcely used except as a means of colouring certain pharmaceutical preparations. It possesses however, very energetic properties, similar to those of the substances just described. It is used in India as a seasoning.

Family Aristolochiæ.

VIRGINIA SNAKE-ROOT. *Radix serpentariæ Virginianæ. Aristolochia serpentaria*, Lin. A perennial plant, growing in Carolina, Virginia, and most parts of the United States. It blossoms in June and July. P. U. The root.

B. C. Root repent, ramose, stem from eight to ten inches high, slender, flexuose; leaves cordiform; flowers growing very near the root, solitary, small, of a deep red, six stamina soldered together with the style and stigma; ovary globular and hairy; fruit, a globular capsule with six saliant angles.

P. P. Root issuing from a common, slender, and elongated

stalk, and consisting of long fibres matted together, ramose, of a brownish colour, of a strong and camphorated smell, and of a warm, bitter and sharp taste.

C. P. It contains, according to Mr. Chevallier's analysis, an essential oil, to which it is indebted for its odour; a bitter yellow matter soluble in water and alcohol, a resinous matter, some gum, albumen, starch, some salts of potassa and lime, a small quantity of iron and silica. Its active principles are soluble in water and alcohol.*

Incomp. Subst. Acetate of lead.

Th. E. The Virginia snake-root possesses very powerful and lasting stimulant virtues; but, besides this general action, it must be observed that it acts also on the skin by stimulating this membrane and increasing perspiration. It has been highly recommended in the treatment of typhoid fevers of armies and prisons, and it has undoubtedly produced very good effects in many cases. It is now less frequently employed, although it is administered with success in obstinate intermittent fevers, in gangrenous affections, chlorosis and atonic affections of the intestinal canal, and, generally, in all the cases in which it becomes necessary to stimulate powerfully the organs, and to promote at the same time a slight diaphoresis. It is most commonly administered in conjunction with the Peruvian bark, or other bitters. It is likewise, occasionally, associated with camphor.

D. & M. of Adm. Powder, gr. x. to xx., and gradually to ʒss. Infusion, ʒiv. to Ibj. of boiling water, of which one or two ounces are given every four hours. ——*Tinctura serpentariæ*, U. S. (Serpentaria, ℥ij.; red sanders, ʒj.; diluted alcohol, Oij.)—L., D. (Serpentaria, ℥iij.; proof spirit, Oij.)—E. (Serpentaria, ʒij.; cochineal, ʒj.; proof spirit, Ibijss.) Dose from ʒss. to ʒij.; and more in a mixture or a bitter drink.

Aristolochia Rotunda and A. Longa, Lin., are plants indigenous to Europe, of the same genus as the preceding, with tuberous, rounded or elongated roots, of a grayish colour externally, yellowish internally, of a bitter and acrid taste, and of an unpleasant odour, possessing the same properties as the *Aristolochia serpentaria*, but in a less degree. They were formerly recommended as powerful emmenagogues; they are no longer used, and enter only into the composition of a few officinal preparations, which are very seldom prescribed.

* [Dr. C. Conwell has lately discovered in this root, a new alkali, which he has called *serpentara*. It forms in a defined crystallized mass of a bitter taste, and possesses all the alkaline properties. The *sulphate* crystallizes in quadrangular prisms, terminated in inclined facets. The *hydrochlorate of serpentara* forms brilliant plumose fibrils. Both these salts are insoluble, except in an excess of acid. The preparation is the same as that by which quassa is obtained; but it requires rather more edulcoration.]—Am. Eds.

[Canada Snakeroot. Wild Ginger. *Asarum canadense*, Lin. A native plant growing in good ground and shady places. P. U. The root.

B. C. Stemless; leaves radical, geminate, kidney-shaped, veined like a network; flowers solitary, on a curved peduncle of a dark purple colour; stamina twelve, unequal; pistil with five stigmas; fruit, a round hexagonal capsule, containing many small seeds.

P. P. Root long, fleshy, of a light yellow colour, smell powerfully aromatic, taste spicy and grateful.

C. P. According to Dr. Bigelow, this root contains a light coloured, pungent volatile oil, a resin of a reddish colour, a very bitter fecula, gum, and some extractive matter.

Th. E. This root is said to possess some of the medicinal properties of the serpentaria, and is commonly used in the country as a diaphoretic. It is a warm, grateful, aromatic stimulant, which may be substituted for ginger in many stomachic preparations. The leaves are powerfully errhine.]

Coffee. *Semen coffeæ. Coffea arabica*, Lin. A small shrub, native of Arabia, and cultivated in the East and West Indies.

B. C. Stem from fifteen to twenty feet high; leaves persistent, green, shining, oval and elongated; flowers white, of a very fragrant smell, a number of them united together in the axilla of the leaves; calix adherent, with five divisions; corolla sub-infundibuliform; stamina jutting out from the corolla; style simple, crowned by a bifid stigma; fruit, a red berry similar to a cherry, with two cells, each containing a horny-like seed.

P. P. Seeds hard and horny-like, oval, convex on one side, flat on the other, having a longitudinal furrow, of a yellowish-gray colour, of a bitter and aromatic taste, of a very agreeable smell *sui generis*. Its properties vary slightly according to the different sorts found in commerce. The torrefaction to which coffee is subjected before employing it, gives it a light brown colour, and generates that perfume and exquisite taste which causes it to be so much sought for by almost every person.

C. P. The untorrefied coffee contains, according to Messrs. Robiquet and Pelletier, some *coffein*, a concrete essential oil, gum, albumen, a sweet and white oil, a bitter principle, and finally, a very acrid oleo-resinous matter. Torrefaction generates some tannin, and an acid, called by Mr. Payssé, *coffeic, (cafique,)* which some chemists consider as being gallic acid.

Coffein is a proximate principle, neither acid nor alkaline. It crystallizes in handsome white and silky needles. It dissolves in water, alcohol, and very imperfectly in ether; submitted to a gentle heat, it melts, then volatilizes. It has not as yet been employed.

Th. E. The stimulating influence of the torrefied coffee, which

is daily used in infusion, is very powerful. Every one knows that it possesses all the advantages of the alcoholic liquors, without producing inebriation, nor all the other consequences with which their use is attended. It promotes digestion, increases the frequency of the pulse, and revives the energy of the intellectual faculties. Its use is consequently recommended in chronic catarrhs, in asthma, amenorrhœa, gout, certain serious diarrhœæ, maintained by the atony of the membranes, in head-aches proceeding from debility of the stomach, in intermittent fevers, &c. Finally, it is exhibited with great success in cases of poisoning by opium and other narcotics, to prevent somnolency and nervous symptoms.

The untorrefied coffee seems to possess very energetic tonic properties. Dr. Grindel has administered it with the greatest benefit in intermittent fevers, and he asserts, after a great number of experiments, that it can be substitut d with advantage for bark in the treatment of these diseases, even of the most obstinate kind.

D. & M. of Adm. *Torrefied coffee*, ℥j. or more in ℥viij. of boiling water.—— *Untorrefied coffee*. Powder, ℈j. every hour in the apyrexia.——*Decoction*, ℥j. in ℥xviij. of water, boiled down to xij.

Family Cruciferæ.

Horse-radish. *Raphani silvestris radix. Armoracia. Cochlearia armoracia*, Lin. A perennial plant, indigenous to France, and growing by the side of brooks, and cultivated in gardens.

B. C. Stem ramose, two or three feet high, smooth; radical leaves very large, elliptical, petiolate, the caulinary smaller, narrow and lanceolate; flowers white, small, in long spikes at the extremity of the branches; calix, four concave divisions; petals spreading; fruit, small ovoid silicles, crowned by a persistent stigma, and composed of two cells containing five or six seeds.

P. P. Root cylindrical, one or two feet long, of the size of the arm, white and fibrous internally, yellow externally, of a very penetrating smell when bruised; entire, it is inodorous. It loses its virtues by desiccation.

C. P. The horse-radish, as well as a great many plants of this family, contains a very acrid volatile principle of an oily character, which seems to contain sulphur; fecula and albumen are likewise found in it. Its active principles are soluble in water, wine and alcohol.

Incomp. Subst. Alkaline carbonates, muriate of mercury, nitrate of silver, the infusions of Peruvian bark and galls.

Th. E. This plant, which is frequently used in Europe, possesses very powerful stimulant properties. Applied to the skin it produces rubefaction, pain, and all the symptoms of inflamma-

tion. Cautiously administered internally, it acts by exciting powerfully the organs, and especially the stomach; but this action is of a short duration. It is principally in scorbutic affections that the horse-radish is exhibited, and the advantages derived from its administration have caused it to be placed at the head of the plants called *anti-scorbutic*. It may likewise be employed in cases where a lively and powerful excitation is required, such as in certain chronic catarrhs, scrofulous affections, chronic rheumatisms, certain dropsies, and chronic diseases of the skin. It may be used externally as a rubefacient, instead of mustard.

D. & M. of Adm. Infusion, from ʒss. to ʒj. to two pints of water.——*Infusum armoraciæ*, U. S. (Horse-radish and mustard seed, āā. ʒj.; boiling water, Oj.) ——*Infusum armoraciæ compositum*, L. (The same, with the addition of compound tincture of horse-radish, ʒj.)—P. (Horse-radish, burdock, dock-root, cochlearia, water-cress and buckbean, āā. 1 part; boiling water, 64.) Dose, a small cupful.——*Stimulant mixture*, Dr. Paris. (Horse-radish, mustard, āā. ʒss.; boiling water, Oj.; aromatic spirit of ammonia, ʒij.; tincture of Cayenne pepper, ʒj.) Dose, one table-spoonful three times a day.——*Spiritus armoraciæ compositus*, L. (Fresh horse-radish, orange peel, āā. ℔j.; nutmeg, ʒss.; proof spirit, Cj.; water, sufficient quantity to distil one gallon.)—D. (Horse-radish and orange peels, āā. ℔ij.; fresh scurvy grass, ℔iv.; nutmeg, ʒj.; proof spirit, Cij.;) to distil two gallons. Dose, from one drachm to four in a suitable vehicle.—— *Spiritus anti-scorbuticus*, P. (Horse-radish, 16 parts; cochlearia, 125; alcohol, 150.) Same dose.——*Vinum anti-scorbuticum*, P. (Horse-radish, 4; cochlearia, water-cress, mustard, buckbean, āā. 2; muriate of ammonia, 1; white wine, 125; spirit of cochlearia, 2.) Dose, from ʒss. to ʒss.——*Syrupus anti-scorbuticus*, P. (Horse-radish, cochlearia, buckbean, water-cress and bitter oranges, āā. 32; cinnamon, 3; white wine and sugar, āā. 128.) Dose, from ʒij. to ʒij.——*Anti-scorbutic gargle*, Paris H. (Bitter infusion, ʒiv.; anti-scorbutic spirit, ʒss; honey of roses, ʒij.)

Cochlearia. Scurvy Grass. *Cochleariæ officinalis herba. Cochlearia officinalis*, Lin. A biennial plant, indigenous to Europe, growing spontaneously on the sea shore, and cultivated in gardens. P. U. The whole plant in a green state.

B. C. Stem herbaceous, ramose, from seven to ten inches high; leaves alternate, numerous, concave, rounded, smooth, green and shining; flowers white, forming a kind of corymb at the top of the branches; fruit, large globular silicle, containing several seeds.

P. P. This plant has an acrid and slightly bitter taste, and a very penetrating smell when it is bruised; entire, it is inodorous.

C. P. It seems to be composed of the same principles as the preceding, which are likewise soluble in water and alcohol.

Th. E. Its modus operandi upon the economy and its employment are the same as those of the horse-radish.

D. & M. of Adm. Infusion, from ʒj. to ʒij. to ℔ij. of water.——*Expressed juice*, from ʒss. to ʒij.——*Anti-scorbutic juice*, P. (Cochlearia, water-cress and buckbean, āā. equal parts.) Same doses.——*Spiritus cochleariæ*, P. (Cochlearia, 3 parts; alcohol 2 parts.)—Pr., Pol. (Cochlearia, 2 parts; alcohol, 1 part; water, q. s.)—A., R., B. (Cochlearia, 4; alcohol, 5; water, a sufficient quantity.) Dose,

from ʒss. to ʒiv.——*Spiritus cochleariæ compositus*, B. (Cochlearia, 80; sage, and crisped mint, āā. 6; fresh orange peels, 12; nutmeg, 1; alcohol, 72; water, 216.) Dose, from ʒss. to ʒj., two or three times a day.——*Conserva cochleariæ*, A., R., B., F. (Cochlearia, 1; sugar, 3.) Dose, from ʒj. to ʒij.——*Syrupus cochleariæ*, P. (Cochlearia juice, 1; sugar 2.) ʒss. to ʒij. and above.

Water Cress,	*Nasturtii aquatici herba, sisymbrium nasturtium*, Lin.
Dittander,	*Lepidium sativum*, Lin.
Cardamine,	*Cardamine pratensis*, Lin.
	Sisymbrium officinalis, Lin.
Stinking Hedge Mustard,	*Erysimum alliaria*, Lin.

And many other plants of the same family are all endowed with the same properties as the preceding articles, and are used to fulfil the same indications.

Family Polygaleæ.

Seneka, or Rattlesnake Root. *Radix polygalæ senegæ. Polygala senega*, Lin. A perennial plant, growing in North America. P. U. The root.

B. C. Stems herbaceous, from eight to ten inches high; leaves sessile, oval, of a light green colour; flowers small, in terminal spikes, calix five deep and irregular divisions; corolla irregular, five petals; fruit, a compressed and bivalve capsule, with two monospermous cells containing black elongated seeds, terminated in a point.

P. P. Root of a variable size, from that of a quill to the size of the little finger, contorted, ramose, having on one side a sort of longitudinal membranous margin. Its bark is grayish, resinous, and covering a whitish and lignous *meditullium*. Its odour is weak and nauseous, its taste sweet at first, afterwards acrid and bitter, provokes coughing and salivation.

C. P. According to Mr. Gehlen, this root contains *senegin*, 6.15; resin, 7.5; sweet extractive matter, 26.85; gum and albumen, 9.5; lignous fibres, &c. 50. According to Dr. Giacomo Folchi, it is composed of a thick oil, partly volatile; free gallic acid; an acrid matter; a yellow colouring matter; a little wax; a gummy extract; a matter containing nitrogen, similar to gluten; woody fibres, sub-carbonate, sulphate and muriate of potassa; carbonate, sulphate and a little phosphate of lime; carbonate of magnesia, iron and silex.

Mr. Peschier, an eminent pharmaceutist of Geneva, asserts that he obtained from the polygala senega, three new substances which he calls *polygalina*, *polygalic acid* and *Isolisin*. The two first substances form in the root a polygalate of polygalina. Water and alcohol take up the remedial principles of this root.

Senegin seems to be the active principle of polygala. It is solid, brown, translucid, of an unpleasant taste; when it is reduced to powder, its smell provokes sneezing. It is insoluble in water and ether, but easily soluble in alcohol. It has not as yet been introduced into practice.

Th. E. The polygala is a very energetic stimulant, which in high doses, often produces vomiting and alvine evacuations. In moderate doses, this remedy promotes the secretion of urine, perspiration and ptyalism. It was considered for a long time, as capable of exercising an especial action on the lungs, and was administered in all the pulmonary diseases, even in cases of acute inflammations. We no longer believe in these supposed specific virtues. It is exhibited successfully in rheumatic affections, in the last period of pulmonary catarrhs, in hydrothorax and certain dropsies, in croup, amenorrhœa, &c. In Germany, according to Dr. Ammon, it is administered internally with great success in the treatment of very acute ophthalmia, in which the antiphlogistic remedies so often fail.

D. & M. of Adm. Powder, from gr. x. to ʒss.——*Dr. Ammon's anti-ophthalmic pills.* (Polygala, ʒiij.; medicinal soap, ʒj.;) for three grains pills. Dose, ten a day.——*Decoctum senegæ*, U. S., L., P. (Polygala, ℥j.; water, Oij.)——*Stimulant mixture*, Paris H. (Infusion of polygala, ʒvj.; syrup of tolu, ʒj.; gum ammoniac, ʒss.) Dose, a table-spoonful every two hours.——*Syrupus senegæ*, U. S. (Seneka root, ℥iv.; water, Oj.; sugar, ℔j.)—Pr., Pol., F. (Polygala, 1 part; water and sugar, āā. 18 parts.) Dose, from ʒij. to ʒj. in a suitable vehicle.——*Mel scillæ compositum*, U. S. *Dr. Coxe's hive syrup.* (Squill and seneka root, āā. ℥iv.; water, Oiv.; clarified honey, ℔ij.; prepare a syrup, to every ounce of which one grain of tartarized antimony is added.) This syrup is one of the best medicines employed in rachitis, hooping cough, croup, &c.; it operates by purging, vomiting and sweat. The dose varies from ten drops to one or more tea-spoonful every fifteen or thirty minutes, or every hour, according to the age of the patient or the violence of the disease.

The Common Polygala. *Polygala vulgaris*, Lin. A very common plant, native of Europe, may be substituted for the Polygala senega. Indeed it possesses the same properties, but in a smaller degree.

Family Scrophulariæ.

Speedwell. *Veronicæ maris summitates. Veronica officinalis*, Lin. A plant, native of Europe, and now very common in North America. It grows on hills and in woods, and blossoms in June and July. P. U. The leaves and tops.

B. C. Stem herbaceous and cylindrical; leaves opposite, oval, dentate and pubescent; flowers violet, in axillary spikes; calix four-parted; corolla rotate, with fertile stamina; stigma simple; fruit, a lenticular capsule.

P. P. This plant is slightly bitter and aromatic, and of a faint odour.

C. P. It communicates to water a green colour, and imparts to it a slight aromatic taste.

Th. E. The speedwell is a weak stimulant. It was once considered as an excellent remedy in icterus, gravel, and other diseases; but now its employment is very much neglected. It is employed in infusion, in chronic pulmonary catarrhs, and in cases requiring a slightly stimulant and sudorific drink. The juice of its fresh leaves is administered as antiscorbutic.

D. & M. of Adm. Infusion, two or three pinches to two pounds of water. *Distilled water*, P. ℥ij. to ℥iv. *Expressed juice*, ℥j. to ℥ij.

The *Veronica beccabunga*, *V. chamædris*, *V. teucrium*, *V. spicata*, possess the same properties as the preceding. They are now altogether out of use.

Family Synanthereæ.

Corymbiferæ.

Wormwood. *Absynthii majoris summitates. Artemisia absynthium*, Lin. A perennial plant, native of Europe, growing in stony and uncultivated places, and flowering in July and August. P. U. The leaves and flowered tops.

B. C. Stem herbaceous, covered with a whitish down; leaves tripinnatifid, whitish on both sides; flowers flosculous, small, yellowish, forming a long and pyramidal panicle; the florets of the centre hermaphrodite, fertile, five-dentate; those of the circumference, female, bidentate, without pappus.

P. P. This plant has a strong and aromatic smell, and a very bitter and aromatic taste.

C. P. According to Mr. Braconnot, it is composed of a very bitter matter containing nitrogen, soluble in cold water, but very little so in alcohol, 18; a matter containing nitrogen and almost insipid, 8; a resiniform substance extremely bitter, soluble in alcohol and boiling water, from which it precipitates on cooling, 1.4; a green volatile oil, 0.9; chlorophyllin, 3; albumen, 7.5; fecula, 1; salts of potassa, 7.5; lignous fibre and water, 552. Cold water and alcohol dissolve its active principles.

Incomp. Subst. The sulphates of iron and zinc, and acetate of lead.

Th. E. Wormwood possesses very energetic stimulant and tonic properties. Administered in too large doses, it creates heat in the epigastric region, thirst, and all the other symptoms of irritation of the stomach. In moderate doses it promotes appetite, facilitates digestion, quickens circulation, in a word, it communicates to the whole economy a strengthening influence. It is very frequently and successfully exhibited in all cases requir-

ing a tonic and stimulant medication, and principally in dyspepsia and other atonic diseases of the digestive canal, in certain amenorrhœæ, chronic leucorrhœæ, in obstinate diarrhœæ, maintained by the debility of the membranes; in certain cases of gout, &c. It has produced some very good effects in intermittent fevers. Finally, it is exhibited with advantage, as an anthelmintic, whenever the digestive organs are not in a state of inflammation.

D. & M. OF ADM. *Powder*, from ℈j. to ʒj. *Infusion*, from ʒss. to ʒj. to ℔j. of cold water.——*Tinctura absynthii*, P., DEN., B., F., POL., PR. (Wormwood, 1; alcohol, 6.) Doses, from ʒss. to ij.——*Tinctura absynthii composita*, P. (Large and small wormwood, āā. 8; cloves, 8; sugar, 4; alcohol, 125.)—F. *Essentia amara*, DEN. (Wormwood, 4; blessed thistle, bitter oranges, and gentian root, āā. 1; alcohol, 48.) Dose, from ʒss. to ij. in a mixture.——*Vinum absynthii*, P. Dose, from ʒij. to iv.——*Oleum absynthii*, P.——*Oleum absynthii æthereum*, POL., DEN., PR. Dose, gut. j. to iv.——*Extractum absynthii*, L., P., POL., PR., A., F., DEN., B. Dose, from ʒss. to ʒj.——*Syrupus absynthii*, P. (Small and large wormwood, āā. 3; water, 48; sugar, 96.) Dose, from ʒss. to ʒij.

ROMAN OR SMALL WORMWOOD. *Artemisia pontica*, Lin. Has a weaker and more agreeable smell than the preceding; it does not seem so active. It is used in the same cases and manner.

MUGWORT. *Artemisia vulgaris*, Lin.

SOUTHERN WOOD. *A. abrotanum*, Lin., &c. possesses the same properties as wormwood, for which it may be substituted.

ROMAN CHAMOMILE. *Chamæmeli romani flores. Anthemis nobilis*, Lin. A perennial plant, native of Europe, and flowering in June or July. P. U. The dry flowers.

B. C. Stem herbaceous, ramose, prostrate, from eight to ten inches high; branches one-flowered; leaves bipinnate, pubescent; flowers radiate; receptacle paleaceous; the florets of the centre, yellow, hermaphrodite, fertile; those of the circumference, white; female flowers, fertile; fruit, with a small membranous protuberance at the top.

P. P. Chamomile flowers, such as they are found in the shops, are white, desiccated, of a very aromatic and rather pleasant smell, and of a very bitter and warm taste.

C. P. They contain an essential oil of a fine blue colour, a gummo-resinous principle, camphor and tannin. Water and alcohol dissolve their active principles.

INCOMP. SUBST. Solution of gelatin, infusion of yellow bark, sulphate of iron, nitrate of silver, corrosive sublimate, and the salts of lead.

TH. E. The Roman chamomile is a moderately energetic stimulant, possessing, on account of its bitterness, some tonic properties, which have rendered it a popular remedy for a number of

diseases. It is employed with success to stimulate the digestive functions in dyspepsia, chlorosis, gout, in flatulent colics, &c. It is also advantageously used in slight intermittent fevers, and spasmodic affections. A strong infusion, taken warm and in a large quantity, provokes vomiting; in consequence of which it is used in this manner, especially in North America and England, in order to assist the action of emetics. Finally, it is administered with advantage as an anthelmintic.

D. & M. of Adm. *Powder*, from ℈j. to ʒj. *Infusion*, in close vessels, from ʒj. to ʒij. to two pints of boiling water.——*Infusum anthemidis*, U. S., L., E. (Chamomile, ʒij.; boiling water, Oss.) Dose, from ʒj. to ℥ij.——*Decoctum anthemidis nobilis*, E., D. (Chamomile flowers, ʒj.; caraway or fennel seeds, ʒss.; water, Oij.)——*Extractum anthemidis, Extractum florum chamæmeli*, U. S., L., E., D., P., Pr., Den., B., F. Dose, from gr. xij. to ʒj.——*Oleum volatile, or æthereum*, Pr., A., L., E., R. Dose, gut. v. to x.

Externally. The infusion in lotions, fomentations, enema, &c.——*Oleum infusum chamæmillæ*, P., Pr., Pol., Den., B. In frictions, embrocations, or liniments.

May Weed. Stinking Chamomile. *Anthemis cotula*, Lin. An annual plant, having great analogy to the preceding. Its smell is very strong and disagreeable; its properties are similar to those of the Roman chamomile, and it is used in the same manner, and to fulfil the same indications. It was once highly recommended in the treatment of hysteria.

The Dyer's Chamomile, *Anthemis tinctoria*, Lin. which gives a fine yellow colour, may likewise be used to meet the same indications.

Pyrethrum. Pellitory of Spain. *Pyrethri radix. Anthemis pyrethrum*, Lin. A perennial plant, native of the Levant. P. U. The Root.

B. C. Stems numerous, high; flowers solitary at the top of the branches, large, radiate; the flowrets of the disc yellow; those of the circumference are white on the upper surface, and red underneath.

P. P. This root is fusiform, of the size of the finger, long, grayish and rugose externally; whitish internally; of a strong and unpleasant smell, when a large quantity is collected together, and of a very acrid and sharp taste, provoking salivation.

C. P. According to Gauthier, it contains an oily matter of a nauseous odour and of an acrid and burning taste, a yellow principle, some inulin, gum, &c. Water and alcohol dissolve its active principles.

Th. E. This root possesses very energetic irritating properties. Applied to the skin, it produces a powerful rubefaction. It was once administered as a stomachic; now, it is scarcely used

except as a masticatory, to promote the discharge of saliva, and to irritate the interior of the mouth, in tooth-ache, certain pains in the head, and palsy of the tongue. It may likewise be exhibited as a gargle in chronic inflammations, and swelling of the amygdalæ. It enters into a great number of dentifrice powders, elixirs, &c.

D. & M. of Adm. In nature, as a masticatory, ʒss. to j.——*Tinctura pyrethri*, P. (Pellitory of Spain and water, āā. 1; alcohol, 5.) ʒss. to j.——*Powder*, as a sternutatory, pinch 1.——*Gargle*, ʒss. to ℔j. of water, reduced to one-third.

Fever-few. *Matricariæ* vel *Parthenii summitates. Matricaria parthenium*, Lin. A biennial plant, native of Europe, very common in cultivated places. P. U. The flowered tops.

B. C. Stems herbaceous, erect, pubescent; leaves winged and large, with pinnatifid leaflets; flowers radiate, solitary, those of the disk yellow and hermaphrodite; those of the circumference white; the ligulate are female, four-toothed; receptacle naked, without scales; fruit without pappus, with a membranous border.

P. P. The smell of the fever-few is strong and very unpleasant. Its taste is warm and bitter.

C. P. It contains a bluish essential oil. Water and alcohol take up its active principles.

Th. E. It is a stimulant very analogous to the Roman chamomile, and nevertheless, it is not so frequently employed. It is principally administered in amenorrhœa or leucorrhœa caused by general debility.

D. & M. of Adm. *Powder*, ℈j. to ʒj. *Infusion*, from ʒj. to ʒij. to ℔ij. of water. *Distilled water*, P. ʒj. to iij. *Expressed juice*, ʒj to ij.
Externally. In injections, lotions, fomentations and poultices.

[The Sweet-scented Golden Rod. *Solidago odora*, Willd. A native plant of the family *Corymbiferæ*, possessing a very agreeable smell, and a moderate astringent bitter taste. It is endowed with gently stimulant, diaphoretic, and carminative properties. An essential oil is prepared from it, which, diluted with alcohol, is in the eastern states a popular remedy in complaints arising from flatulence, and serves as a menstruum for taking unpleasant medicines of various kinds. It has been used with success to allay vomiting, to relieve spasmodic pains in the stomach, &c.]

The following plants are all possessed of stimulant properties, and were used formerly in nearly the same cases as the preceding; but they are now obsolete, except as a substitute for some of the above:—

Common Chamomile. *Chamæmeli vulgaris flores, Matricaria chamomilla*, Lin.

Milfoil. *Millefolii herba et flores, Achillea millefolium*, Lin.

Sneeze-wort. *Ptarmicæ folia, Achillea ptarmica*, Lin.; is principally used as a masticatory and sternutatory.

Single Marigold. *Calendulæ flores, Calendula officinalis*, Lin.

Wild Marigold. *Calendula arvensis*, Lin.

Balm-leaved Spilantus. *Spilanthus acmella*, Lin.

Common Tansy. *Tanacetum vulgare*, Lin.

Officinal Alecost. *Tanacetum balsamita*, Lin. &c. &c.

Family Labiatæ.

Peppermint. *Menthæ piperitæ herba et flores, Mentha piperita*, Lin. Perennial plant, native of England, and cultivated in America and on the continent of Europe. P. U. The whole plant.

B. C. Stem erect, one or two feet high, ramose; leaves oval, dentate on the periphery; flowers violet, in short and very close spikes at the top of the branches.

P. P. The odour of this plant is agreeable and penetrating; its taste is pungent, slightly bitter, followed by a sensation of cold in the mouth.

C. P. It contains an abundance of yellowish essential oil, containing camphor, a little resin, and extractive. Its active principles are soluble in water and alcohol.

Th. E. Peppermint possesses very decided stimulant properties, for which it is indebted to its essential oil. It is consequently administered, and with great advantage, in affections requiring the employment of stimulants, and especially in the atonic and nervous affections of the stomach, such as dyspepsia, flatulent colics, spasmodic vomiting, cardialgia, &c. It is likewise very useful in certain amenorrhœæ, in chlorosis, hysteria, and other diseases called nervous. Finally it is associated with other remedies, and especially with purgatives, to facilitate their action, or conceal their odour or unpleasant taste.

D. & M. of Adm. Powder, from ℈j. to ʒss. Very seldom used. *Infusion*, one or two pinches, to a quart of boiling water.——*Aqua menthæ piperitæ*, U. S., L., E., D., P., &c. Dose, from ʒj. to ʒiv. alone, or most commonly in a mixture.——*Aqua menthæ piperitæ vinosa*, Pr., Pol. (Peppermint and alcohol, ää. equal parts; water, as much as necessary.) Dose from ʒij. to ʒiv.——*Tinctura menthæ piperitæ*, U. S. (Oil of peppermint, f.ʒij.; alcohol, Oj.)——*Spiritus menthæ piperitæ*, L., E., P., A., R., B. (Peppermint leaves, ℔jss.; alcohol, Cj.; distil.) Dose, from gut. xx. to ʒss.——*Syrupus menthæ piperitæ*, P., B. (Peppermint, 1 part; distilled water, 32 parts; sugar, as much as necessary.)——

Oleum menthæ piperitæ. Dose, from gut. ij. to iv.——*Elæo-saccharum menthæ piperitæ*, A. (Oil of peppermint, 1 part; sugar, 24 parts.)——*Peppermint lozenges*, P. (Oil of peppermint, 1 part, sugar, 86 parts; water, as much as sufficient.) This kind of lozenges are commonly called peppermint drops.—No. vj. to xij. for a dose.

The other plants of the same genus possess very nearly the same virtues as the preceding; they are consequently employed in the same cases, and in the same manner. The most used of them are, the Crisped Mint, *Mentha crispa*, Lin.; the Green Mint, *M. Viridis*, which is very much used in England; the Pennyroyal, *M. pulegium*, Lin.; the Elegant Mint, *M. gentilis*, Lin.

Sage. *Salviæ folia. Salvia officinalis*, Lin. A plant, native of the South of France. P. U. The leaves and flowered summits.

B. C. Stem ramose; leaves elongate, with denticulate borders, the surface rugose; flowers violet, in close and verticillate spikes; calix sub-campanulate; corolla tubular, two stamina with short filaments, anthers with two cells, separated by a connecting filamentiform membrane.

P. P. Sage has an aromatic and strong odour, its taste is warm, sharp and slightly bitter.

C. P. It contains a large quantity of essential oil of a green colour, furnishing 0.125 of camphor, a little gallic acid and extractive. Water and alcohol dissolve its active principles.

Incomp. Subst. The salts of iron.

Th. E. Sage is stimulant and tonic. It is administered with success in the last stage of chronic catarrhs, in dyspepsia, in old diarrhœæ, spasmodic vomiting, &c. It is considered also as a powerful emmenagogue and carminative. Its infusion is employed as a gargle in cases of atonic angina with relaxation of the soft palate.

D. & M. of Adm. *Powder*, gr. xv. to ℈j. *Infusion*, ʒij. to ʒss. to ℔j. of water. *Distilled water*, P., Pol., A., Pr., ʒj. to ʒiij. *Essential oil*, P., gut. ij. to v. *Vinegar*, P. ʒjss. to ʒj.

Meadow Sage. *Salvia pratensis* and Garden Clary, *Salvia Selarea*, Lin. Both possess the same properties.

Rosemary. *Rosmarini hortensis herba. Rosmarinus officinalis*, Lin. An evergreen shrub, native of the south of France. P. U. The leaves and flowered summits.

B. C. Stem from seven to eight feet high; leaves sessile, elongated, narrow; flowers of a pale blue colour, in small spikes at the summit of the branches; calix bilabiate; corolla, tube inflated above, two salient stamina, anthers cohering.

P. P. This plant has an acrid, warm, and slightly astringent taste, and a very strong odour.

C. P. It contains a large quantity of colourless essential oil, from which Mr. Proust has extracted 0.10 of camphor, a resinous principle, and a little tannin.

Th. E. Rosemary possesses the same properties as the preceding substances, and is employed in the same cases, and principally in difficult digestions, chlorosis, &c.

D. & M. of Adm. *Powder*, gr. x. to ℈ij. *Infusion*, ʒj. to ʒij. to Ibij. of boiling water.——*Spiritus rosmarini, Queen of Hungary's water*, U. S., E., D., L., A., Pol., F., P. ʒj. to iv.——*Acetum aromaticum*, P., E., Pr., Den., F. (Rosemary, wormwood, sage mint, āā. 8; cinnamon, 2; cloves and nutmegs, āā. 1; vinegar, 64.) *The four thieves vinegar*, P. (Is very nearly the same composition, with the addition of garlic.)

Externally. In lotions, baths, and fumigations.

Lavender. *Flores lavandulæ. Lavandula vera*, De Cand. A perennial plant of the south of France, flowering from May to September. P. U. The flowered summits.

B. C. Stem woody, ramose, whitish; leaves lanceolate, pointed, entire, glaucous; flowers bluish, verticillate, sessile, disposed in terminal spikes.

P. P. Its smell is aromatic and pleasant, and its taste bitter and warm.

C. P. It contains a large proportion of essential oil of a straw colour, which furnishes 0.25 of camphor. Water and alcohol take up its active principles.

Incomp. Subst. Sulphate of iron.

Th. E. Although lavender possesses very energetic stimulant properties, it is nevertheless very little used now, except as a perfume. It may, however, be administered with advantage under the same circumstances as the preceding substances. Several practitioners recommend it in cases of violent and periodical head-aches, in tremor of the limbs, and other affections depending on a want of physiological action of the nervous system. The powder is used occasionally as a sternutatory.

D. & M. of Adm. *Powder*, from ℈j. to ʒss.—*Infusion*, from ʒj. to ʒij. to a pint of boiling water.——*Aqua lavandulæ*, P., A.——*Spiritus lavandulæ*, U. S., L., D., E., P., &c. (Fresh lavender, Ibij.; alcohol, Cj. or more.)——*Tinctura, seu Spiritus lavandulæ compositus*, U. S. (Spirit of lavender, Oiij.; spirit of rosemary, Oj.; cinnamon, ʒj.; cloves, ʒij.; nutmeg, ℥ss.; red sanders, ʒij.)—L., D., E., F., differing slightly from the preceding.——*Oleum lavandulæ*, P., A. Dose, gut. ij. to viij. on sugar.——*Spiritus lavandulæ volatilis*, P. (Solution of sub-carbonate of ammonia, 32; oil of lavender, 1; alcohol, 4.) From gut. x. to ʒj.

Externally. In lotions, fomentations, baths, and fumigations.

The Broad-leaved Lavender. *Lavandula spika*, Lin. A variety of the preceding, for which it is almost always mistaken. It furnishes an essential oil called *oil of spike*.

The Stœchas or French Lavender. *Lavandula stœchas*, Lin. A plant native of the south of France, differing only from the preceding by its more agreeable smell. It contains, like the former, a very odorous essential oil, and may be an excellent substitute for it; it appears, however, to be less active. A *syrup of stœchas*, P. is prepared from this plant, which is added to antispasmodic mixtures, in the dose of from ʒss. to ʒj.; and a *compound syrup of stœchas*, which, although more active, in consequence of the very stimulant substances of which it is composed, is administered in nearly the same doses.

Balm. *Melissæ officinalis herba. Melissa officinalis*, Lin. A perennial plant, growing in the south of France. P. U. The whole plant.

B. C. Stem ramose, from one to two feet high; leaves opposite, cordiform; flowers white, verticillate; calix bilabiate, the superior lip three-divided, the inferior two-divided.

P. P. The green plant has a very agreeable smell, similar to that of lemon, and a harsh and slightly aromatic taste.

C. P. It contains a white essential oil, and a small quantity of bitter extractive matter. Water and alcohol dissolve its active principles.

Incomp. Subst. Sulphate of iron, nitrate of silver, and acetate of lead.

Th. E. Balm is a weak stimulant, which is considered as antispasmodic, and frequently used in nervous affections. The distilled water of this plant is the common vehicle of soothing or anodyne mixtures. Its infusion, taken warm, is slightly diaphoretic.

D. & M. of Adm. *Infusion*, 1 or 2 pinches, to ℔ij. of boiling water.——*Distilled water*, P., A., Pol., Pr., Den. Dose ʒj. to ʒiv.——*Spiritus*, P. Dose, ʒss. to ʒij.——*Aqua carmelitana*, Den. (Balm, 18; lemon peel, 4; nutmeg, coriander seed, āā. 2; cinnamon, 1; alcohol, 72; balm water, 36.)

Externally. In lotions, baths, and fumigations.

Hyssop. *Hyssopi folia et summitates. Hyssopus officinalis*, Lin. A plant growing in the south of France. P. U. The leaves and flowered summits.

B. C. Stem sub-frutescent, ramose, one foot high; leaves sessile, narrow, acute; flowers blue or pink, united in the axilla of the superior leaves.

P. P. Hyssop has an agreeable and aromatic odour, and a warm, pungent, and slightly bitter taste.

C. P. It contains a yellow essential oil, some bitter principles, and sulphur. The remedial principles are soluble in water and alcohol.

Th. E. This substance, slightly stimulant, is recommended as

expectorant, and is frequently used in chronic pulmonary catarrhs, in phthisis, and other affections of the lungs.

D. & M. of Adm. *Infusion*, 2 or 3 pinches, to Ibij. of boiling water.—— *Syrup*, P. ℥ss. to ℥ij.

Horehound. *Marrubii albi folia. Marrubium vulgare*, Lin. A perennial plant, indigenous to Europe and naturalized in this country, very common, and flowering during all the summer. P. U. The leaves.

B. C. Stem hairy, whitish; leaves oval, tomentose; flowers whitish, small, verticillate; calix ten-dentated.

P. P. Horehound has an aromatic and musk-like odour, and an acrid, warm, and bitter taste.

C. P. It contains a volatile oil, a bitter principle, and some gallic acid. Water and alcohol dissolve its active principles.

Incomp. Subst. Sulphate of iron.

Th. E. It is a very energetic stimulant, very much used in the last stage of catarrhs and peripneumony, in phthisis, and obstructions of the liver, &c. It is also administered as an emmenagogue, an antispasmodic, and a diaphoretic. In too large doses it sometimes acts as a laxative.

D. & M. of Adm. Infusion, 1 to 2 pinches to Ibij. of boiling water.——*Syrup*, P. ℥ss. to ℥ij.

[Dittany. Wild Basil. *Cunila mariana*, Lin. An annual labiate plant, peculiar to the United States, and found in dry soils, is, as the generality of plants belonging to this family, a gentle stimulant.]

[Blue Scull-cap. Hooded Willow Herb. *Scutellaria lateriflora*, Lin. A native plant, growing abundantly on the banks of rivers, near ditches, ponds, &c. P. U. The whole plant.

B. C. Stem from one to three feet high, square, branched, glabrous; leaves opposite, narrow-pointed, dentate, and supported by long petioles; flowers in axillary, lateral, and leafy racemes; flowers small and blue; calix, margin entire and closed with a galeate lid after flowering.

This plant has been of late highly reputed as an antidote in canine madness, and kept a secret for a long time. Dr. Vandeveer acquired extensive popularity by the success he obtained from the exhibition of this article, and is said to have prevented upwards of three hundred persons from becoming mad. From the high reputation, therefore, of scull-cap, perhaps surpassing that of any other remedy, practitioners ought to resort to the use of this plant on every occasion which may offer itself, either in relieving mankind of this awful malady, or in arresting the devas-

tation among the brute creation. This plant is used in powder or infusion, and may be exhibited in unlimited doses without producing unpleasant effects. It is said to possess a considerable efficacy as an antispasmodic in cases of spasm and other nervous affections. However, the supposed wonderful virtue of this plant in the cure of hydrophobia still requires confirmation.

The Ground Ivy,	*Hederæ terrestris herba. Glechoma hederacea*, Lin.
Stinking Horehound,	*Marrubiastrum. Ballota nigra*, Lin.
Common Germander,	*Chamædryos herba. Teucrium chamædris*, Lin.
Marum Germander,	*Teucrium marum*, Lin.
Ground Pine,	*Teucrium chamæpitys*, Lin.
French Ground Pine,	*Teucrium iva*, Lin.
Water Germander,	*Teucrium scordium*, Lin.
Wood Betony,	*Betonica officinalis.*
Sweet & Wild Marjoram,	*Origanum majorana* and *O. vulgaris*, Lin.
Common Thyme, & Mother of Thyme,	*Thymus vulgaris* and *T. serpillum.*
Catmint,	*Nepeta cataria*, Lin.
Common Basilic,	*Ocymum basilicum*, Lin.
Summer Savory,	*Satureia hortensis*, Lin.
Dead-Nettle,	*Lamium album*, Lin.
Mother-Wort,	*Leonurus cardiaca*, Lin.
Self-Heal,	*Prunella vulgaris, &c. &c.*

Have all been more or less employed, but they are now almost completely out of use, although they possess very determinate stimulant properties. There are also in the family *Labiatæ*, a great number of plants possessing more or less energetic stimulant virtues, and which may be substituted for each other without any inconvenience.]

Family Umbelliferæ.

Garden Angelica. *Angelicæ sativæ radix, herba, semina. Angelica archangelica.* A biennial plant growing in the south of France. P. U. The root, stem, and seed.

B. C. Stem cylindrical, large, ramose, striate and hollow internally; leaves very large, bi or tri-pinnate; flowers white, in large and numerous umbels, involucrum composed of several leaflets; the partial involucrum of about eight folioles; petals slightly curved, two divergent styles; fruit ovoid, membranous on the edges, with five longitudinal and saliant parallel lines.

P. P. The desiccated root, such as it is found in the shops, is large, fleshy, fusiform, very ramose, gray and wrinkled exter-

nally, and whitish internally; the seeds are short, obtuse, and bordered with membranaceous wings; finally, the stems are fleshy, smooth, and of a reddish colour. Every part of this plant has a strong and very pleasant smell, and a bitter, warm, and musk-like taste.

C. P. The whole plant, and the root especially, contain an essential oil, resin, inulin, and an extractive matter. Water and alcohol dissolve its active principles.

Th. E. Angelica possesses very powerful stimulant properties, which may be exhibited with advantage in all the diseases in which an excitant medication may be useful. It is administered with success in disorders produced by the debility of the digestive organs, such as dyspepsia, spasmodic vomiting, flatulent colic. It is useful likewise in certain nervous cephalalgic pains; in tremor of the limbs, chlorosis, hysteria, &c. It has been recommended as a powerful emmenagogue, and under other circumstances as a diaphoretic. Finally, in the last stage of chronic catarrhs of the lungs it has been exhibited with success, in order to facilitate expectoration, and restore to the mucous membrane the tone it had lost.

D. & M. of Adm. Root and seeds. *Infusion*, ʒij. to ʒiv. to Hbij. of boiling water.——*Distilled water of the seeds*, P., ʒj. to ʒij.——*Tinctura angelica*, A. (Angelica root, 1; alcohol, 6.) Dose from ʒss. to ʒij.——*Extractum angelicæ*, A., Pol., Pr. Dose, ϑj. to ʒj.——*Conserve*, P., ʒj. to ʒij. and above.

Fennel Seed. *Fœniculi fructus. Anethum fœniculum*, Lin. A plant native of the south of France. P. U. The seeds and roots.

B. C. Stem herbaceous, ramose, smooth, from four to five feet high; leaves vaginant at their base; cut into almost capillary folioles; flowers yellow, without involucrum or involucellum; three petals revolute; stamina spreading, longer than the corolla; fruit elongated, flattened on the edges.

P. P. The seeds are ovoid, striate longitudinally, of a pale green colour, of a strong aromatic and agreeable smell, of a sweetish and slightly acrid taste. The root is long, of the size of the finger, and almost inodorous.

C. P. Fennel seeds contain a green essential oil, which congeals at — 5° Centig. (23° Fahr.) and a fixed, inodorous, and tasteless oil. Water and especially alcohol dissolve their active principles.

Th. E. Fennel seed, like those of a great number of plants belonging to the family *Umbelliferæ*, are endowed with very energetic stimulant properties, for which they are indebted to the essential oil they contain. They are frequently employed in difficult digestion, such as dyspepsia, flatulency, in colic of children,

certain serous diarrhœæ, &c. They are said to increase the secretion of milk in nurses.

D. & M. of Adm. *Powder*, from ℈j. to ʒj. *Infusion*, ʒij. to ʒiij. to Ibj. of boiling water.——*Distilled water*, P.——*Aqua fœniculi*, L., D., Pol., Den., A., Pr., F., B. Dose from ʒj. to ʒij.——*Oleum fœniculi*, P., R., Pol., Pr., A., B., D. Dose gut. v. to x.——*Elæo-saccharum fœniculi*, Pr., A. (Essential oil of fennel seed, 1; sugar, 24 to 30.)——*Syrupus fœniculi*, A. (Fennel, 1; water, 6; sugar, q. s.) Dose from ʒj. to ʒij.

Externally, Infusion, in fumigations, lotions, baths, injections, &c.

Dill Seed. *Anethum graveolens*, Lin. Is of an oval form, convex on one side, flat on the other, having three striæ on the outside, and surrounded with a small membranous border; its taste is slightly acrid and its odour stronger, but less pleasant than fennel seed. It is used to fulfil the same indications.

Aniseed. *Semina anisi. Pimpinella anisum*, Lin. An annual plant, native of the Levant, and cultivated in most parts of Europe. P. U. The seeds.

B. C. Stem herbaceous, ramose, one foot high; radical leaves petiolate, round and dentate; the cauline leaves gashed into narrow and linear segments; flowers white, without involucrum or involucellum; petals equal, cordiform; stamina longer than the petals; anthers round, globular; fruit ovoid, slightly pubescent.

P. P. Seeds greenish, ovoid, lunated, striate longitudinally, of a warm, aromatic, and sweet taste, of an agreeable smell.

C. P. Their shell contains a white essential oil, congealing at 10° Centig. (50° Fahr.) and the almond yields an inodorous fixed oil. Its active principles are soluble in water and principally in alcohol.

Th. E. The properties of the aniseed are similar to those of the fennel. It is, of course, employed under the same circumstances, and even more frequently than the latter. It is a popular remedy in flatulencies.

D. & M. of Adm. *Powder*, from ℈j. to ʒj. *Infusion*, from ʒj. to ʒij. to Ibij. of boiling water.——*Aqua anisi*, P., A., Den. Dose from ʒj. to ʒij.——*Spiritus anisi*, L., A. (Aniseed, 3; alcohol, 64; water, q. s.) Dose from ʒss. to ʒiv.——*Spiritus anisi compositus*, D. (Aniseed and angelica seeds, āā. Ibss.; alcohol, Cj.; water, q. s.) Same doses.——*Oleum anisi*, U. S., L., E., P., Pol., Den., Pr. Dose gut. v. to x.——*Oleo-saccharum*, P.——*Elæo-saccharum anisi*, A., Pr. (Essential oil of aniseed, 1; sugar, 24.)——*Extractum pimpinellæ*, Pol. Dose from ℈j. to ʒss.

Caraway Seeds. *Fructus carvi. Carum carvi*, Lin. A biennial plant, native of Europe, growing in the meadows and on the mountains of the south of France. P. U. The seeds.

B. C. Seeds ovate, elongated, recurved, striate, of a green-brown colour, of a very aromatic odour and warm savour.

C. P. They contain an essential oil which dissolves completely in alcohol, and only partially in water.

Th. E. They are exhibited in the same cases as the preceding.

D. & M. of Adm. *Powder*, ℈j to ʒj.——*Aqua carvi*, L., A. Dose from ʒj. to ʒij.——*Spiritus carvi*, L., E., D. Dose from ʒss. to ʒi.——*Oleum carvi*, U. S., L., D., P., A., Pr. Dose from gut. ij. to vj.

Externally. Essential oil in frictions.

Cumin. *Fructus cumini. Cuminum cyminum*, Lin. An annual plant, native of the Levant, and cultivated in Europe. P. U. The seeds.

B. C. Stem from one to two feet high, ramose; leaves gashed in very narrow segments; flowers yellow or white; involucrum and involucellum formed of a small number of leaflets; petals equal, emarginate, and cordiform; fruit ellipsoid, striate.

P. P. Seeds ellipsoid, elongate, not curved, striate, of a fallow colour, of a strong smell and very aromatic taste.

C. P. They are almost entirely composed of a yellowish essential oil, possessed of a sharp taste, and soluble in alcohol.

Th. E. The same as those of the preceding article, but it is still less employed. It is used externally as a stimulant, and to induce resolution.

D. & M. of Adm. Powder, seldom. Dose from ℈j. to ʒss.——*Infusion*, from ʒj. to ʒij. to Ibij. of water.

Externally. *Emplastrum cumini*, L. (Cumin, caraway, laurel berries, and wax, āā. ʒiij.; pitch, Ibiij.)

The seeds of the four last mentioned plants were once known by the name of Carminative Seeds.

Coriander Seed. *Coriandrum sativum*, Lin. An annual plant, native of Italy, and cultivated in other parts of Europe. It has, when fresh, a very unpleasant smell of bed-bugs; it is, on the contrary, very agreeable and aromatic when dry. It acts in the same manner as aniseed, &c. and enters into several officinal compounds, and especially into the *compound balm water*, P. Its infusion is occasionally employed as a sudorific. It is used likewise as a corrective of certain purgatives.

Chervil. *Scandix cerefolium*, Lin. An annual plant, native of Europe, possesses some stimulant properties. It is commonly used for culinary purposes. The expressed juice of its leaves is a part of the *temperant and diuretic juices*, P. An *extract* is prepared from it, P., which is administered in the dose of from ℈j. to ʒij.

Carrot Root. *Daucus carota*, Lin. In its wild state it is

slender, acrid, and of a strong and aromatic smell. It has been employed in decoction as a stimulant, but is now seldom used. This root cultivated, is used as food, and is too well known to require a description. It is frequently employed as a poultice in carcinomatous ulcers, and in cases of fissures of the nipples of nurses. This seed was once among the four aperient seeds, as well as *Ammi majus*, Lin., Common Parsley, *Apium petroselium*, Lin., Odorous Apium, *Apium graveolens*, Lin. which are now no longer employed.

The root of the Master-wort, *Imperatoria ostruthium*, Lin. a plant indigenous to Europe, and growing on mountains; has a warm and very aromatic taste, and seems to possess as energetic and stimulant properties as those of Angelica. It is now very seldom used; however, it may not deserve to be entirely neglected.

Family Aroideæ.

Sweet Flag or Calamus Aromaticus. *Acori veri radix* seu *Calamus aromaticus. Acorus Calamus*, Lin. A perennial plant, indigenous to Europe, growing on the sides of ponds and marshy places, and abundant also in America.

B. C. Root horizontal, repent; stem simple, compressed; leaves narrow and ensiform; spadix cylindrical, destitute of spathe, containing a great number of hermaphrodite flowers; calix persistent; five stamina; ovary unilocular; fruit a triangular capsule, with three cells.

P. P. Root of the size of the finger, tortuous, articulated, of a spongy structure, of a resinoid fracture, covered with shining dots; of a fallow colour externally, of a rosy-white internally; of a sharp, warm, and bitter taste, and of a pleasant aromatic odour.

C. P. The fresh root, analyzed by Tromsdorff, has furnished volatile oil, 0.1; soft resin, 2.3; extractive matter, 3.3; gum, 5.5; inulin, 1.6; lignous fibres, 21.5; and water, 65.7. Its active principles are soluble in water and alcohol.

Incomp. Subst. Acetate of lead.

Th. E. The Calamus aromaticus possesses unquestionable stimulant properties. It is employed very successfully as a stomachic. The German practitioners administer it with advantage in the treatment of intermittent fevers; but, in this respect, it is very inferior to Peruvian bark. It has been highly recommended in order to subdue cerebral symptoms attending the second period of ataxic fever. This very active medicine is perhaps too much neglected in our days.

D. & M. of Adm. *Powder*, from ℈j. to ʒj. *Infusion*, from ʒj. to ʒvj. to ℔j. of boiling water.——*Extractum calami*, Pr., Pol. Dose from ℈j. to ʒj.——*Tinctura calami composita*, Pol. (Calamus aromaticus, 1; zedoary and angelica roots, āā. 1; bitter oranges, 2; alcohol, 36.) Dose from ʒss. to ʒj.

[Indian Turnip. Three-leaved Arum. *Arum triphyllum*, Lin. A perennial tuberous plant, growing in North and South America, in shady places. P. U. The root.

B. C. Spathe univalve, cuculate, convolute at the base; leaves radical, ternate; folioles sessile, oval, acuminate, entire, and smooth; spadix naked at top, feminine in the inferior part; staminiferous in the middle; no perianthe; fruit, scarlet berries with one or several seeds.

P. P. Root tuberous, roundish, flattened with many white fibres around the base; the lower part of the bulb covered with a blackish, loose and wrinkled skin. When fresh, it is violently acrid, pungent, and even caustic to the tongue, but not to the skin. It loses much of this property by drying. It contains a large proportion of fecula, and an amylaceous matter similar to arrow root has been prepared from it.

Th. E. This root has acquired a great reputation in country practice as a remedy in pulmonary affections. It is prescribed in phthisis pulmonalis, asthma, croup, and hooping-cough, and experience has shown that this article is to be ranked among the most active of our expectorants, and so far, may be serviceable in old catarrhs, and other pituitous cases. It has been also prescribed with success in rheumatism, and in aphthous sore throat. In this latter affection Dr. Thacher says it is a remedy of approved efficacy. An ointment made of the fresh root has been recommended in tinea capitis and tetter.

The fresh root is too caustic to be used internally except when very much diluted. Dr. Bigelow observes, however, that it imparts none of its acrimony to milk when boiled with it. When desiccated and too old, it is inert, unless it has been dried very quick, and kept in a proper manner. The most common way of using it in this last state, is grated and mixed with honey or syrup. It may be given thus in doses of from twelve to sixty grains three times a day.]

Family Aurantiaceæ.

Orange Tree. *Citrus Aurantium*, Lin. An evergreen tree, native both of the East and West Indies, and cultivated, on a large scale, in the south of France, and in almost all warm latitudes. P. U. The leaves, flowers, fruit, and peels of the fruit.

B. C. Stem smooth and cylindrical; leaves oval, entire, shining on both sides, covered with glands containing a volatile oil; calix short and flat; corolla five sub-campanulate petals; about twenty stamina with white filaments, very often soldered two or three together; anthers cordiform; stigma thick, globular, and yellowish; ovary ovoid, with eight, nine, or ten cells; fruit, a multilocular berry.

Orange Tree, Leaves and Flowers. *(See Antispasmodics.)*

ORANGE. *(See Temperants.)*

ORANGE PEEL. *Cortex aurantiorum* seu *flavedo.*

P. P. This substance is in flat fragments, of a deep yellow colour, wrinkled, and resembling shagreen on one side, owing to the presence of a number of small glands, which, in the fresh state, contain a large quantity of essential oil, of a bitter aromatic taste, and a very agreeable odour.

C. P. It contains a good deal of essential oil and a very bitter matter. Water and alcohol dissolve its active principles.

PREP. The rind of the orange is dried, after having been freed, as much as possible, of the white substance with which it is furnished internally.

INCOMP. SUBST. Sulphate of iron, infusion of yellow bark, and lime water.

TH. E. Orange peel acts as a stimulant and a tonic, on account of its essential oil and of its bitterness. It is most commonly used as a stomachic and a carminative, in connection with other stimulants. It enters into the composition of a great number of officinal preparations.

D. & M. OF ADM. *Powder*, from ℈j. to ʒj. *Infusion*, from ʒij. to ℥ss. to a quart of boiling water.——*Infusum aurantii compositum*, L. (Dried orange peel, ℥ij.; fresh lemon peel, ʒj.; cloves ʒss.; boiling water, Oss.) Dose from ʒj. to ʒiv. two or three times a-day——*Tinctura aurantii*, L., D. (Orange peel, ʒiij.; proof spirit, Oij.)——*Tinctura corticum aurantiorum*, PR., POL., A., DEN. (Orange peel, 3 parts; alcohol, 24 parts.) Dose, from ʒj. to ʒij.——*Spiritus aurantiorum corticis*, R., B. (Orange peel, 1 part; alcohol, 5 parts.)——*Aqua aurantii corticis*, U. S.——*Aqua citri aurantii*, E., A.——*Syrupus aurantiorum*, U. S., L., E., D., P., &c. Dose, ʒj. to ʒij. in a mixture.——*Confectio aurantiorum*, U. S., L., E., D. (Fresh orange peel, 1 part; sugar, 3 parts.) Dose, from ʒij. to ʒiv.——*Oleum corticis aurantiorum*, P., DEN., PR., POL., A. Dose, gut. ij. to gut. iv.——*Oleo-saccharum aurantiorum*, P., A.

LEMON PEEL, fruit of the *Citrus medica*, Lin. has the same appearance as that of the orange; when dry, its odour only differs slightly from it, and its taste is less warm. It is employed for the same purposes and in the same manner. An essential oil, much used in perfumery, is obtained from it. The peel of the fruit of a variety of this tree, called *citrus bergamium*, Lin. produces the essential oil of bergamotte, so much esteemed as a perfume, and employed in pharmacy to scent many preparations.

CURASSOA ORANGES, *Aurantia curassaventia*, or small oranges fallen from the tree long before their maturity, have properties similar to those of the orange peel; they are, however, more bitter and acrid. They are used in this country and in England for the same purposes as the orange peel, and also as issue peas.

Family Theaceæ.

Tea. *Thea sinensis. Thea bohea et T. viridis,* Lin. A shrub cultivated in China and Japan. P. U. The dry leaves.

B. C. Trunk from twenty-five to thirty feet high; leaves alternate, very smooth, elongate, from two to five inches long, tough; flowers whitish, axillary, united three or four together; calix persistent, five divided; corolla five or six or even more petals; about one hundred stamina, collected in the centre of the flower; anthers round, bicelled; ovary round, covered with rough bristles; fruit, a three-celled capsule, each cell containing one or two seeds.

P. P. We find in commerce several kinds of teas, which may be divided into two principal species; viz. 1st, the green teas, amongst which we may distinguish principally the *hyson* tea, and *gunpowder*, which are of a green or grayish colour, of an acrid, astringent, and slightly bitter taste, severally rolled, and of an agreeable aromatic smell; 2d, the black teas, the colour of which is of a dark brown, of a much weaker odour and taste than the green teas, and rolled, generally, lengthwise. The most esteemed are the *Souchong* and *Pekoe.* The aromatic smell of tea does not properly belong to it, as it was formerly believed; it is now known that tea is indebted for its odour to the flowers of the *Olea fragrans* and *Camellia sasanqua,* with which it is perfumed when perfectly dry, and before putting it into cases.

C. P. Green tea contains a large proportion of tannin, some gum, gluten, a volatile matter, and some lignous fibres: black tea, according to Brande, contains less tannin. Water and alcohol dissolve its active principles.*

Prep. The leaves are immersed in boiling water for half a minute, they are withdrawn, permitted to drain and dry, by stirring them constantly on heated iron plates; this operation is renewed two or three times. In several species of the most esteemed teas, each leaf is rolled with the hand.

Incomp. Subst. The salts of iron, gelatin, and lime-water.

[* Mr. Oudry has discovered in the souchong tea a peculiar substance, *Thein,* which is combined in the tea with a peculiar acid, which he has not yet determined. This substance is much more soluble in water than the bases hitherto known; it crystallizes in needle-shaped crystals; thrown on live coals, it first undergoes fusion and leaves a charcoal not very voluminous; it dissolves in from thirty-five to forty parts of water, at the temperature of 12°, Centig. (53½° Fahr.) and in alcohol it is soluble in every proportion; it forms salts, but its capacity of saturation is small. It gives but doubtful indications of alkalinity. The citrate crystallizes sometimes in silky needles, at other times in elongated prisms; the sulphate crystallizes in small needles, having the appearance of amianthus. Mr. Oudry reserves the question for future determination, whether the medicinal properties of tea reside in the resin or in the principle which he has discovered.]—*North American Medical and Surgical Journal, No. VIII.*

Th. E. Tea, especially the green, possesses stimulant properties tolerably energetic; and, as it is almost always taken in a warm infusion, it acts likewise as a diuretic and as a diaphoretic. This drink is, in general, used among the northern people of Europe. It powerfully assists digestion, and it is even administered in France as a popular remedy in indigestions.

D. & M. of Adm. Infusion, ʒj. to ʒij. to ℔ij. of boiling water.

Family Coniferæ.

Turpentine. *Terebinthina.* A resinous juice obtained from several trees of the family *Coniferæ.* The principal kinds of turpentine are—[the American Turpentine, furnished abundantly by the *Pinus palustris*, Lin. *P. australis*, Michaux, a tree growing principally in our southern states; the Common Turpentine, *Terebinthina communis*, obtained from the *Pinus sylvestris* and *P. rubra*, Lin.; wild and Scotch pines, both trees native of the north of Europe;] the Bordeaux Turpentine, *Terebinthina picea*, from the *P. maritima*, Lin., Bordeaux pine; the Strasbourg Turpentine, *Terebinthina abietina*, from the *P. picea*, Lin., silver fir tree; the Venice Turpentine, *Terebinthina laricea*, from the *P. larix*, Lin., white larch; and the Canada or Fir Balsam, *Terebinthina canadensis*, Lin., furnished by the *P. balsamea*, American silver fir.

B. C. Trunk elevated, ramose at top, covered with a smooth, and in some species with rough bark; leaves linear, more or less elongate, pointed, persistent, of a more or less deep green; flowers monoicous, male flowers in scaly aments; two anthers fixed to the scales; female flowers amentaceous as well as the male, two on each scale; fruit, a pyramidal cone of variable size, composed of imbricated and thick scales, containing almonds of a turpentine taste.

P. P. These turpentines are, generally, thick, and of the consistence of honey, of a light yellow, or brown colour; some are turbid, others transparent; of a strong smell, *sui generis;* of an acrid, bitter and nauseous taste. The Venice turpentine, the most esteemed, is in general tolerably liquid, slightly greenish, of a strong smell, but less unpleasant than that of the preceding kinds; of a warm and bitter taste; finally, the Canada balsam is thick, glutinous, whitish, transparent, of a strong and fragrant smell, analogous to that of the balsam of gilead, of a bitter and slightly rancid taste.

C. P. These turpentines are composed of resin, and essential oil, of which we shall soon speak. It is entirely soluble in alcohol, and partially so in water.

Prep. A series of wounds, about three inches long by one deep, are made in the trunk of the pines, and the juice flowing from these wounds is received in vessels or cavities dug at the

foot of the tree. It is then purified by warming and straining it through a straw filter, or else by exposure to the sun in wooden boxes, with small holes in the bottom through which the turpentine flows into an appropriate vessel. This substance purified by the latter process, is far superior to that obtained by the former mode.

Th. E. Turpentine is a very powerful stimulant. Applied to the skin, it irritates and rubefies it. Administered internally in large doses, it produces, in the first instance, nausea, vomiting, and abundant alvine evacuations; afterwards, it is absorbed, and produces a lively excitement throughout the whole economy, as is evinced by the frequency of the pulse, the heat and redness of the skin, cephalalgia, vertigoes, &c. In moderate doses, it causes similar, but less intense effects. The stimulant action of this substance seems, in a great number of cases, to affect more especially the genito-urinary organs, and the mucous membranes generally. It is well known, that the urine of persons who have taken it, or even who breathe momentarily its vapour, acquires a remarkable smell of violets, and that the saliva is often imbued with its odour and unpleasant taste. It is employed with advantage in the last period of chronic catarrhs of the bladder, and of the other parts of the urinary system; in chronic pulmonary catarrhs, in order to facilitate expectoration, and stimulate the mucous membrane. It is likewise very useful in certain mucous diarrhœæ, maintained by the atony of the intestinal canal, and, in some cases, of gout and rheumatism. Finally, it is frequently applied externally to cleanse wounds and ulcers; and enters into the composition of numerous salves and irritant plasters.

D. & M. of Adm. *Internally.* From gr. x. to ʒj. two or three times a day, either in pills or suspended in an emulsion.——*Terebinthina cocta*, P., B., Pol., Pr., A. (This is prepared by depriving it partly of its essential oil, by boiling it in water. It is of course much less active.) Dose from ʒss. to ʒj. in pills.

Externally. Unguentum digestivum, P. (Turpentine, 2 parts; yolk of eggs, 1 part; oil, sufficient quantity.)—R. (Turpentine, 3 parts; yolk of eggs, 4 parts.)——*Balsamum terebinthinatum*, Den., A. (Turpentine and essential oil of turpentine, āā. 4 parts; yellow wax, 3 parts.)——*Baume de Genevieve*, Balsam of Genevieve, P. (Turpentine, 64 parts; olive oil, 192; yellow wax, 32; red sanders, 7; camphor, 1.)——*Unguentum terebinthinæ*, Pr. (Turpentine, 12; honey of roses, 4; oil of John's wort, 3; aloes, 1.)——*Fioravanti's balsam*, P. (Turpentine, 129; resin elemi, tacamahaca, yellow amber, galbanum, and myrrh, āā. 24; liquid styrax, 16; aloes, galangal, zedoary, ginger, cinnamon, cloves, and nutmeg, āā. 12; laurel berries, 32; alcohol, 750.) It is employed in frictions, and sometimes internally in the dose of from gut. v. to x.——*Gummous diachylon plaster*, P. (Simple plaster, 50; turpentine, wax, and pitch, āā. 3; gum ammoniac, bdellium, galbanum, and sagapenum, āā. 1; alcohol, a sufficient quantity to dissolve the gum resins.)

Essential Oil or Essence of Turpentine. *Oleum* seu *Spiritus terebinthinæ*. A volatile oil furnished by turpentine.

P. P. A limpid, colourless liquid of the specific gravity of 0.86; very volatile and inflammable; of a sharp, warm and acrid taste; of a strong, penetrating, and peculiar odour.

C. P. According to Mr. Saussure, this oil contains no oxygen, but is composed of carbon, 87.78; hydrogen, 11.64; and nitrogen, 0.56. Boiling alcohol dissolves it easily, but most of it separates on cooling. It is soluble in 6 of sulphuric ether. It combines in every proportion with fixed oils; dissolves camphor, resins, and caoutchouc; unites easily with alkalies to form saponaceous compounds, *(savonules,)* and commonly reddens the tincture of litmus. Combined with gaseous hydrochloric acid by means of a frigorific mixture, it absorbs about one-third of its own weight of it, and forms a soft and crystalline mass, composed of 20 of a liquid having the character of an acid, and 110 of a white, crystalline, and very volatile substance of a camphorated smell, which is called *artificial camphor.*

Prep. It is obtained by distilling the turpentine.

Th. E. In large doses, this oil acts as a purgative, and produces no general phenomena; but in small doses it is absorbed, and induces the same effects as turpentine; but these effects have rather more intensity, on account of its greater activity. Dr. Recamier and many other practitioners, exhibit this substance with much success in the treatment of neuralgia in general, and especially in sciatica and *tic douloureux.* In these cases, some time after the ingestion of the remedy, we observe that a great sensation of heat occurs along the course of the diseased nerve, and is followed with an abatement of the pains, and often a complete cure of the disease. Spirit of turpentine is likewise administered with success in certain cases of debility of the genito-urinary organs, in obstinate blennorrhagia and leucorrhœa. It has been recommended as a diaphoretic in rheumatic affections. Several English practitioners affirm having successfully used it in the treatment of epilepsy and even of tetanus. Finally, it is administered as an anthelmintic, principally for the cure of tænia. Dr. Kennedy, an English physician, relates numerous instances of its efficacy in cases of this kind. This substance must then be administered in doses sufficiently large to produce copious alvine evacuations.

The essential oil of turpentine is employed externally, as a rubefacient, in croup, angina maligna, &c. applied on the throat by means of a piece of flannel; and as a stimulant, in neuralgia, lumbago, indolent tumours, atonic ulcers, hospital gangrene, &c.

D. & M. of Adm. *Internally.* As general stimulant, gut. x. to xx. in honey or in an emulsion. As an anti-neuralgic, ʒss. to ʒj. in several doses.——*Turpentine mixture,* Paris H. (Spirit of turpentine, ʒij.; honey of roses, ℥iv.) Dose three spoonfuls a day.——*Turpentine emulsion,* Paris H. (Spirit of turpentine, ʒiij.; yolk of egg, No. I.; mint water, ℥ij.; orange flower water and ether, āā. ʒj; tincture of cinnamon, ʒss.) Dose one table-spoonful three times a day.——*Tur-*

pentine opiate, PARIS H. (Spirit of turpentine, ʒij.; gum arabic and sugar, āā. ʒjss.; orange flower water, ʒj.) Dose, one-third every day in three doses. As an anthelmintic, ʒss. to ʒij. in an emulsion or sweetened milk.——*Turpentine injection*, PARIS H. (Essential oil of turpentine, ʒj.; yolk of egg, No. 1; decoction of poppy heads, ℔ss.)

Externally. In frictions or lotions.——*Linimentum terebinthinæ*, U. S., L. (Cerate of yellow resin, ℔j.; spirit of turpentine, Oss.)——*Turpentine liniment*, PARIS H. (Spirit of turpentine, ʒj.; oil of chamomile, ʒij.; Sydenham's laudanum ʒj.)

BURGUNDY PITCH, *Pix Burgundica*, is nothing but the turpentine desiccated on the tree by exposure to the action of the air, then melted, and filtered through a straw filter. This substance is in opaque and amorphous masses, softening even by the heat of the hand, and becomes then unctuous and tenacious; of a yellow colour more or less deep, of an odour and taste analogous to that of turpentine. Its composition differs from the latter only by its containing less essential oil. Applied to the skin it produces rubefaction, and sometimes an eruption of small pimples, but no vesication.

It is only used externally, as a derivative in rheumatic affections, pleurodinia, certain vague pains, &c. It is spread on a piece of skin, and frequently united with about one-third of yellow wax. It enters into the composition of numerous stimulant plasters.

COLOPHONY or DRY RESIN, *Colophonia*, is the resinous part of the turpentine, remaining in the still after the extraction of the essential oil by distillation. This substance is solid, transparent, very brittle, of a vitreous fracture, of a brown colour more or less deep, tasteless, of a resinous and weak smell. It enters into the composition of a great number of plasters. Reduced to powder, it is applied on the surface of bleeding wounds, to stop profuse bleeding.

The YELLOW RESIN, *Resina flava*, *Resina pini*, is produced by stirring the preceding substance in water, when still in the liquid state. It is sold in opaque lumps, brittle, of a vitreous fracture, of a yellow colour, and almost inodorous. It is used only in the preparation of certain plasters.

The same is the case with the BLACK PITCH, *Pix Nigra*, which is prepared by burning slowly pieces of resinous woods, and the straw filters which have been used in the preparation of turpentine and Burgundy pitch. It is black, brittle, smooth, of a resinous smell, and very viscous when softened by heat. It is the base of the *Unguentum picis nigræ*, L. (Black pitch and resin āā. ʒix.; olive oil, Oj.)——P. (Black pitch, colophony, and

yellow wax, āā. 1; olive oil, 4 parts.) It is employed as a maturative and stimulant.

Tar, Liquid Pitch, *Pissa*, *Pix liquida*, is a very impure mixture of essential oil of turpentine, resin, empyreumatic oil, carbon, and acetic acid; which is prepared by the slow combustion of the trunks of the trees which furnish the turpentine, in an oven of a peculiar construction. It is liquid, of the consistence of a very thick syrup, tenacious, of a blackish brown colour, of a strong and peculiar smell. Water dissolves a part of it, and acquires a yellow colour and a sharp and empyreumatic taste. This solution possesses properties sufficiently energetic, and is employed in chronic catarrhs of the lungs and bladder, in certain diseases of the skin, rheumatism, asthma, and in scorbutic affections.

D. & M. of Adm. *Internally.* *Pilulæ picis*, U. S. (Tar, ʒj.; elecampagne, in powder, a sufficient quantity to form a mass, to be divided into 60 pills.)——*Aqua picis liquidæ*, D. (Tar, Oij.; water, Cj.)—P. (Tar, 1 part; water, 32.) From 1 to 2 pints a day.——The use of the vapour of tar has recently been recommended, in England, in pulmonary consumption; but this practice does not seem to deserve any confidence.

Externally. *Unguentum picis liquidæ*, U. S., E. (Tar, 5 parts; yellow wax, 2 parts.)—L., D. (Tar and mutton suet, of each equal parts.) These ointments are used with advantage, as detergents in scabby, foul eruptions, and tinea capitis.

Fir Buds, *Abietis turiones*, have a bitter and resinous taste, and a turpentine smell. They are sometimes used, in aqueous infusion, in scorbutic and rheumatic affections, &c. They enter into the composition of the *fir* or *antiscorbutic beer*, P. (Horseradish, fir buds, āā. 1; cochlearia, 2; new beer, 64.)

Juniper. *Fructus juniperi. Juniperus communis*, Lin. A shrub, indigenous to Europe, and naturalized in this country, growing on dry and barren hills. P. U. The fruit.

B. C. Stem straight, ramose; leaves verticillate, ternate, pungently acute; flowers dioicous, in axillary aments; male flowers, scales in the form of a nail, bearing on their internal surface globular and sessile anthers; female flowers, involucrum, fleshy, globular, three-parted; fruit, globular berries of the size of a pea, and containing two or three small nuciform triangular seeds.

P. P. The juniper berries are blackish, pulpy, of the size of a pea, of a strong and agreeable smell, of a bitter, warm, and turpentine taste.

C. P. They are composed, according to Tromsdorff, of volatile oil, 1; wax, 4; resin, 10; sugar, 33.8; gum, 7; lignous fibres and water, 48; besides several salts. Water and alcohol dissolve their active principles.

Th. E. Juniper berries exercise on the general economy a very decided stimulating action, which seems, nevertheless, to

act more especially upon the kidneys and to increase the secretion of these organs. They impart to the urine a smell of violets, and may sometimes, when exhibited in very large doses, produce bloody urines. They are used with advantage in the atonic affections of the stomach and of the intestinal canal, in chronic catarrhs of the bladder and urethra, in some diseases of the skin, in scorbutic dropsies, and in amenorrhœa produced by the debilitated state of the uterus.

D. & M. of Adm. *Powder*, from ʒss. to ʒij. *Infusion*, from ʒss. to ʒj. to one pint of boiling water.——*Distilled water*, P., A. Dose from ʒij. to ʒiv.——*Extract*, P. from ℈j. to ʒj.——*Rob juniperi*, A., Pr., Pol., Den., F., R., B. Dose, from ʒss. to ʒij.——*Spiritus juniperi*, B., A.——*Spiritus juniperi compositus*, U. S., L., E., D. (Juniper, ℔j.; caraway and fennel seeds, āā. ʒjss.; diluted alcohol, Cj.; water, q. s.; distil one gallon.) Dose, from ʒj. to ʒij.

Externally, in fumigations, baths, poultices, &c.

Family Terebinthaceæ.

Balsam of Gilead. Mecca, Judea, or Syria Balsam. *Balsamum Meccanense, Judaicum, Syriacum*, a resin furnished by the *Amyris opobalsamum*, Wild. and *A. gileadensis*, Lin. a shrub growing in Arabia.

B. C. Stem from six to eight feet high, with slender branches terminated by a thorn; leaves alternate, composed of from five to seven folioles, small, sessile, and shining; flowers small and geminate; calix five-parted, persistent; fruit, a small ovoid drupe, containing a monospermous almond.

P. P. This resin is liquid, whitish when it is recent; in time it acquires a yellow colour and a greater consistence. Its odour is very agreeable, and not unlike that of aniseed; its taste is resinous and aromatic.

C. P. It is soluble in alcohol, excepting a small portion of a peculiar resinous matter, the properties of which have been investigated by Mr. Vauquelin.

Th. E. The therapeutic properties of balm of gilead, do not differ, in any way, from those of the other turpentines, with which it is most commonly adulterated. It is but little used at the present time, although it was once considered as possessing almost miraculous properties.

D. & M. of Adm. Gut. viij. to ʒss. in pills, or in suspension in the yolk of an egg.

Resin Elemi, *Elemi*. Resin furnished by the *Amyris elemifera*, Lin., and *Icica icicariba*, De Cand. Trees of South America.

P. P. The resin elemi, furnished by the latter of these plants, is that which is now met with in the shops; it is in semitransparent masses, of a yellowish colour, intermixed with greenish

dots, soft and unctuous at first, dry and brittle afterwards, of a strong smell, almost similar to that of fennel seed, of a warm and slightly bitter taste, and of a specific gravity of 1.0182. That which is produced by the *Amyris elemifera* is very scarce, and is found only in old collections; it is in dry and yellowish pieces, weighing two or three pounds, and wrapped up in reed leaves. It does not, however, differ from the preceding.

C. P. It contains about one-sixteenth part of its weight of essential oil, which may be obtained by distillation, and to which it is indebted for its odour. It is almost all soluble in alcohol: the residue appears to be of a gummous nature. It unites, in any proportion, to fatty substances.

Th. E. Its properties do not differ materially from those of the other resins; that is to say, it acts as a stimulant. It is little used except externally, and it enters into the composition of several plasters, and into that of *Fioravanti's Balsam.*

D. & M. of Adm. *Unguentum elemi compositum,* L. (Elemi, ℔j.; turpentine, ℥x; suet, ℔ij.; olive oil, f.℥ij.)—D. (Elemi, ℔j.; white wax, ℥viii.; hog's lard, ℔jv.)——*Arcæus's balsam,* P. (Elemi and turpentine, āā. 4 parts; suet, 3; hog's lard, 2.)——*Unguentum elemi,* Pol., B., Pr. (Elemi, turpentine, suet, lard, āā. equal parts.)

Myrrh. *Gummi-resina myrrha.* A gum resin, which seems to be furnished by the *Amyris kataf.* A shrub, native of Arabia.

P. P. This substance is in tears, or irregular drops, brittle, semitransparent, of a reddish-yellow colour, of a shining fracture, of an agreeable smell, of a bitter and aromatic taste, and of a specific gravity of 1.36.

C. P. It is composed, according to Pelletier, of resin and essential oil, 34; gum, 68. It is more soluble in water than in alcohol; and, rubbed with one-fifth of camphor, it becomes perfectly miscible with this liquid.

Th. E. Myrrh, administered in small doses, acts as a tonic; it strengthens the stomach, facilitates digestion, and promotes appetite. In large doses it is powerfully stimulant, and its action operates on all the organs. It is exhibited with success in certain amenorrhœæ, in chlorosis, in atonic affections of the stomach and intestines, in convalescence after a violent disease, in which the digestive function has been considerably impaired, in chronic pulmonary catarrhs, &c. It is often administered in connection with other bitters and ferruginous preparations. Externally, it is very useful as a gargle in angina maligna. It has been highly recommended in the treatment of caries of the bones, and this practice has been very successful when this disease proceeded from the atony of the parts. It is employed likewise in the

form of lotions, in cases of sordid and obstinate ulcers, and in scorbutic relaxation of the gums. This energetic remedy is highly valued by the American, English, and German practitioners, but too little used in France.

D. & M. of Adm. Powder, gr. x. to ʒj.——*Pulvis myrrhæ compositus*, B. (Myrrh, 60; opopanax, sagapenum, and castoreum, āā. 30; oils of mint and of rue, āā. a sufficient quantity.——*Liquor myrrhæ*, Pr., Pol., Den. (Myrrh, 1; boiling water, 4.) Dose, from 1 to 4 table-spoonfuls a day.——*Mistura ferri cum myrrhâ*, or *mistura ferri composita*, (see ferri sulphas, page 80.)——*Pilulæ aloes et myrrhæ*, olim. *Pilulæ rufi*, U. S., L., E., D. (Aloes, 4 parts; myrrh, 2 parts; saffron, 1 part.) Dose from gr. x. to ℈j. once or twice a day.——*Pilulæ aloes cum myrrhâ et guaiaco*, U. S. (Aloes, ʒss.; saffron, myrrh, āā. ʒij.; resin of guaiacum, oxide of antimony, āā. ʒss.)——*Pilulæ myrrhæ et ferri*, U. S. (Iron filings, ʒj.; myrrh, Castile soap, āā. ʒij.; for 6 grains pills.)——*Tinctura myrrhæ*, U. S., E. (Pulverized myrrh, ʒiij.; alcohol, f.ʒxx.; water, f.ʒx.)—L. (Myrrh, ʒiv.; rectified spirit, Oiij.)—D. (Myrrh, ʒiij.; proof spirit, Ojss.; rectified spirit, Oss.)—P. (Myrrh, 1; alcohol, 8; water, 4.)—Den., Pr., Pol., F., R., A., B. (Myrrh, 1; alcohol, 6.) Dose, from ℈j. to ʒj. in a mixture.

Externally, as a lotion, diluted with a sufficient quantity of water.——*Extractum myrrhæ*, P., Pr., A., Pol. Dose, from gr. v. to x.

Mastiche. *Resina mastiche.* A resinous substance furnished by the *Pistacia lentiscus*, Lin. A shrub, native of the Levant, and carefully cultivated in the Island of Chio.

B. C. Stem from eight to ten feet high; leaves composed of from eight to twelve leaflets, all alternate, except the two superior ones, oval and lanceolate; flowers dioicous, very small, in axillary panicles; fruit pisiform and reddish.

P. P. Irregular masses, *Common mastiche*, or flat tears of various sizes, *Mastiche in tears*, dry, pulverulent, of a vitreous fracture, transparent, slightly reflecting the various colours, of a pale yellow, of an agreeable smell when heated, or simply rubbed, of an aromatic taste, and becoming soft under the teeth.

C. P. This substance is completely soluble in ether; alcohol dissolves only four-fifths; the remainder is a peculiar substance, very elastic as long as it is moist, but brittle when dry; in this latter state, it is soluble in warm absolute alcohol; but insoluble in this liquid when cold. This substance has been called by Matthews *Masticin*.

Th. E. Mastiche, like all the other resins, possesses tolerably powerful stimulant properties. It was once very generally used, and entered into the composition of many officinal preparations; at the present time it is very seldom employed; and, nevertheless, it might be useful in chronic catarrhs, serous diarrhœæ, and other affections of the same nature. The Greek women are constantly chewing this substance, in order to strengthen their gums, and perfume their breath.

D. & M. of Adm. Gr. x. to ʒss.——*Spiritus mastiches compositus*, Pr. (Mastiche, myrrh, olibanum, āā. 1; alcohol, 24.)

Chio Turpentine. *Terebinthina pistacina*, the most esteemed and rare of all the turpentines, is furnished by the *Pistacia terebinthus*, Lin., which grows abundantly in the Grecian archipelago. It is very thick, transparent, of a greenish-yellow colour, of an agreeable smell, and of a sweet and perfumed taste. It possesses precisely the same properties as common turpentine. (See page 211.)

Olibanum or Incense. *Gummi-resina olibanum* seu *Thus*. A gum-resin, which has for a long time been considered as a product of the *Juniperus lycia*, Lin.; but which is known now to be furnished by the *Boswellia serrata*, Roxburgh. A tree growing on the mountains of India.

B. C. Trunk elevated; leaves grouped at the extremity of the branches, imparipinnate, composed of ten pairs of oblong, dentate, sessile, and villose folioles; flowers numerous, small, in axillary clusters, and of light pink colour; fruit, a three-sided, three-locular, and three-valved capsule, containing three large, cordiform, and winged seeds.

P. P. We meet in commerce with two sorts of incense; the first comes from Africa, and is furnished by a tree as yet unknown, which was, for a long time, thought to be the *Juniperus lycia*, Lin. It is in amorphous masses formed of yellow tears, mixed with larger ones of a reddish colour, not very brittle, of a waxy fracture, becoming soft between the fingers, of an aromatic and warm taste, of an agreeable smell. The second comes from Calcutta, which is furnished by the *Boswellia serrata*, and is purer and more valued than the former. It is in round tears, yellowish, semitransparent, covered with a white dust, of a taste and odour more agreeable than the preceding, and of a specific gravity of 1.221.

C. P. This substance, according to Braconnot's analysis, is composed of resin, 56; volatile oil, 5; and gum, 30. It is partly soluble in water, and partly in alcohol. It melts with difficulty with a moderate degree of heat, and burns rapidly with a white flame, exhaling a very fragrant smell.

Th. E. Like the other substances above described, olibanum possesses very positive stimulant properties; it is, however, scarcely ever used at present, except in fumigations, vapour baths, &c. It enters into the composition of several officinal preparations, such as theriaca, &c.

D. & M. of Adm. *Emplastrum aromaticum*, D. (Frankincense, ℥iij.; yellow wax, ℥ss; cinnamon, ʒvj.; essential oils of pimento and lemon, āā. ʒij.)——*Pulvis fumalis*, R. (Olibanum, mastiche, and succin, āā. 3; styrax, 2; benzoin and ladanum, āā. 1.) Thrown upon burning coals.

Bdellium. *Gummi-resina bdellium*, is a gum-resin, the origin of which is yet unknown, but which Mr. Lamarck believes to be produced by an African *Amyris*. This substance is in round masses, of a reddish or greenish colour, of a dull and waxy fracture, of an aromatic smell, and of an acrid and bitter taste. It is composed, according to Pelletier, of resin, 59; gum, 9912; bassorine, 30.6; and volatile oil, 1.2. It is very little used, and enters into the composition of the French *gummous diachylum* plaster, and into several other plasters.

Family Leguminosæ.

Peruvian Balsam. *Balsamum peruvianum.* Juice of the *Myroxylum balsamiferum*, Lin. A tree of South America, common in Peru.

There are two kinds of Peruvian balsam found in commerce; the one is very rare, of a deep brown colour, opaque, of a semi-solid consistence, of a very agreeable smell, and of a sweet and perfumed taste. It exudes from the tree by means of incisions made in its bark. The other is very common, almost black, with a reddish hue, transparent, more liquid than the preceding, of a stronger smell, and a more bitter and acrid taste. It is thought to have been obtained by boiling in water the branches and the bark of the *Myroxylum*. Mr. Stoltz thinks that both these balsams exude from the tree.

C. P. According to Mr. Stoltz, this substance is composed of resin, 231; a peculiar oil, 690; benzoic acid, 64; extractive matter and loss, 15. It burns easily when put over a flame, dissolves in alcohol, and yields its benzoic acid to boiling water.

Th. E. The Peruvian balsam possesses, like all the balsamic substances, very energetic stimulant properties It was once much employed in the diseases of the lungs, and it was so much esteemed as to be considered a successful remedy in pulmonary phthisis. It may be useful in chronic pulmonary catarrhs, asthma, certain atonic affections of the mucous membrane of the urinary passages, such as leucorrhœa, obstinate blenorrhagia, &c. Externally it is exhibited with advantage in the dressing of sordid ulcers.

D. & M. of Adm. Gr. xij. to ʒss. and even ʒj. in pills, or in a mixture, suspended either by means of mucilage or the yolk of an egg.

Balsam of Tolu. *Tolutanum balsamum.* A juice exuding from the *Myrospermum peruiferum*, De Cand. A tree growing in South America, and nearly related to the preceding.

P. P. This substance is solid, of a soft and glutinous consistence, or dry and friable, according to its age; of a fallow or brown yellow colour, of a granulated or crystalline texture,

semitransparent, of a warm and sweetish taste, and of a very fragrant odour.

C. P. It is composed, as all the substances properly called balsams are, of a resin and benzoic acid; it dissolves in six parts of alcohol, and partly in boiling water. It melts easily, and burns with a smoke of an agreeable odour.

Th. E. It is much more employed than the Peruvian balsam, and it possesses exactly the same properties. It is administered in the same cases, and is often used to perfume stimulant and tonic mixtures.

D. & M. of Adm. Gr. vj. to ʒss. in pills, or in an electuary, or else suspended in water by means of a mucilage or the yolk of an egg.——*Tinctura tolutani*, U. S.——*Tinctura toluiferæ balsami*, E., P. (Balsam of tolu, ʒjss.; alcohol, Oj.) Dose from ʒj. to ʒij.——*Syrup*, P. (Balsam of tolu, 1; water, 4; sugar, 8.)——*Syrupus tolutanus*, L., E. (Balsam of tolu, 1; boiling water, 6; sugar, 24.) Dose from ʒij. to ʒj.

Resin or Balsam Copaiba. *Oleo-resina copaiba. Copaivæ*, seu *Cobaibæ balsamum.* A resin furnished by the *Copaifera officinalis*, Lin.; a tree growing in the same regions as the preceding.

B. C. A large bushy tree, with alternate leaves, composed of from five to eight folioles, shining, and almost sessile; flowers white, in ramose and axillary clusters; calix four-parted; no corolla; stamina distinct, spreading; fruit bivalve, containing one or two seeds.

P. P. Liquid of an oily consistence, transparent, of a yellowish-white colour, of a strong and disagreeable smell, of an acrid and bitter taste, and of a specific gravity of 0.950.

[C. P. Balsam copaiba, according to E. Durand's analysis, contains an essential oil, forming about one-half of its weight; a resin; a small quantity of acetic acid; a fatty matter; traces of muriate of lime, and of a sweet substance. It dissolves in twenty-five times its weight of alcohol at 35° of Baumé's areometer, leaving behind the insoluble fatty matter, which precipitates in the form of semi-fluid, transparent, and yellowish globules, not soluble in any additional quantity of the same menstruum; but the whole of the copaiba dissolves in ether, absolute alcohol, and essential oils. Copaiba, when perfectly pure, and mixed with one-seventeenth of pure calcined magnesia, acquires a degree of solidity sufficient to allow it to be formed into pills, *(Revue Medicale.)* This preparation requires six or eight hours to inspissate, and in time it becomes still more solid.*]

Th. E. This very stimulant substance promotes digestion, when it is administered in small doses; but in large doses, it causes nausea, alvine evacuations, &c. When absorbed, it is

* [See No. I. of the Journal of the Philadelphia College of Pharmacy, April, 1829.]—Am. Eds.

principally on the mucous membranes it seems to act, and especially upon the genito-urinary organs, in the same way as turpentines. It is employed with success in chronic catarrhs, in coughs with great expectoration, and certain affections of the lungs unattended with inflammation. It proves successful in serous diarrhœa maintained by the atony of the intestines, in obstinate leucorrhœa, &c. It is in order to reduce the blennorrhagic discharges that balsam copaiba is principally used. It was commonly administered when the inflammatory symptoms had been abated; but Drs. Delpech and Ribes, have of late exhibited it on the outset of the disease, however great the inflammation might be; and they affirm having obtained the greatest advantages from its early employment. Dr. Velpeau, in order to obviate the inconveniences of this remedy when taken in large doses, has proposed to administer it in glysters, and numerous successful experiments leave no doubt whatever of the efficacy of this method.*

D. & M. of Adm. Merely as a stimulant, gut. x. to xx. two or three times a day, upon sugar or in an emulsion. In the treatment of blennorrhœa, from ʒij. to ʒiv. and even more, daily, in a mixture or pills.——*Pills of solidified copaiba.* (Copaiba, ʒj.; pure calcined magnesia, ʒss.;) mix carefully and permit the mass to become solid; for 4 grains pills, two of which contain 15 drops of the liquid balsam. Dose from 1 to 3, three or four times a day.——*Astringent mixture*, called *Chopart's mixture*, Paris H. (Balsam copaiba, syrup of marsh mallow, mint and orange flower waters, āā. ʒij.; gum Arabic and nitric acid, āā. ʒj.) Cochl. ij. to iij. a day.——*Astringent glyster*, Velpeau, (Balsam copaiba, ʒj. to ʒiv.; yolk of an egg, No. I.; gummous or marsh mallow water, ʒiv.)

[Essential Oil of Copaiba,† is obtained by distillation from the preceding article.

P. P. When pure, it is limpid, colourless, and marks 25° of Baumé's arcometer; its specific gravity is 0.880; it is volatile, inflammable, possesses a peculiar taste and smell, not unlike that of the oil of turpentine, but the taste is not so bitter and acrid. The impure oil is of a greenish-blue colour.

C. P. Cold alcohol dissolves one-twenty-fifth part of its weight, but more than double this quantity when it boils, part of which precipitates on cooling; sulphuric ether takes up about its own volume, and strong nitrous ether one-sixteenth of its weight; it mixes with alkalies, and does not redden the tincture of litmus, as the oil of turpentine. It does not affect potassium, and may consequently be considered as containing no oxygen; it seems to contain more carbon than the other oil of turpentine.

* [This method we have used, but we always exhibit a laxative previously, and when the bowels are evacuated, and are in a quiet state, then the injection of copaiba is administered with success, and we obtained the same results as if taken by the mouth. This method has great advantages, particularly when the patient cannot retain the copaiba on the stomach.]—Am. Eds.

† [See No. I, of the Journal of the Philadelphia College of Pharmacy.]—Am. Eds.

Th. E. This oil was lately introduced into the French practice by Mr. Dublanc, jr. in the treatment of gonorrhœa. Drs. Bard and Cuellerier witnessed its happy effects in thirty patients whom they cured in five or six days, of this disease. Several physicians of this country have exhibited it also with great success.

D. & M. of Adm. From gut. x. to xv. on a lump of sugar or suspended in a mucilage.——*Spiritus olei copaibæ*, Dublanc, (Essential oil of copaiba, 1 part; rectified alcohol, 2 parts.) Distil.——*Mixture of spirit of oil of copaiba*, Dublanc. (Syrup of tolu, ℥ij.; peppermint water, spirit of oil of copaiba, āā. ℥iij.; extract of opium, gr. j.)——*Emulsion of oil of copaiba*, Durand, (Oil of copaiba, ℥ij.; gum arabic, ℥ss.; cinnamon water, ℥ij.; simple syrup, ℥jss.; tincture of opium f.℥ss.) Dose from 3 to 6 table-spoonfuls a day.]

Family Diospyreæ.

Benzoin. *Balsamum benzoinum* seu *Asadulcis.* A balsamic substance which exudes from the *Styrax benzoe*, Dryander, a tree growing in the island of Sumatra.

B. C. Trunk elevated, ramose, with a whitish bark; leaves alternate, striate, tomentose underneath, smooth on the upper surface; flowers in axiliary clusters, all on the same side of the common petiole; calix campanuliform; corolla, five obtuse and linear petals; ten stamina; fruit, a dry and globular berry.

P. P. There are two kinds of benzoin, the *Amygdaloid benzoin*, which is in solid masses, made up of white tears united by a brownish paste, brittle, of an even and shining fracture; and the *benzoin in sorts*, the fracture of which is of a red brown, and of a uniform appearance. The smell of benzoin is aromatic and pleasant, its taste is warm and slightly acid, its specific gravity is of 1.092.

C. P. This substance, according to Bucholz, is composed of resin, 83.3; a matter analogous to balsam of Peru, 1.7; an aromatic principle, 0.5; benzoic acid, 12.5; impurities, lignous fibres, &c. 2. Warmed, it melts, decomposes, and produces white fumes of impure benzoic acid. It is entirely soluble in alcohol and ether; alkaline solutions separate from it the benzoic acid, water acts in the same way.

Th. E. Benzoin is a general stimulant, which is used in some cases of chronic catarrhs, in order to stimulate the lungs and facilitate the expectoration, in the atony of the digestive organs, in certain intermittent fevers. Inhaling the fumes disengaged from benzoin placed on live coals, has been recommended to people afflicted with chronic pulmonary catarrhs. These fumes are likewise very useful in the treatment of indolent tumours; and by means of woollen cloths impregnated with it, they are rubbed over the affected part.

D. & M. of Adm. Gr. x. to ℥ss.——*Tinctura benzoes*, P., A., Den., Pr. Dosc, from ℥ss. to ℥j.——*Tinctura benzoini composita*, L., D., Pol., Pr. (Benzoin, ℥iij.; storax balsam, strained, ℥ij.; balsam of tolu, ℥j.; aloes, ℥ss.; alcohol,

Oij.)—E. (Benzoin, ℥iij.; balsam of Peru, ℥ij.; hepatic aloes, ℥ss.; alcohol, ℔ij. Suspended in a mixture by means of a mucilage or the yolk of an egg. ——*Syrupus benzoes*, P. (Benzoin, 1 part; boiling water, 4 parts; sugar, 8 parts.) Dose, from ʒij. ℥j.

Externally, in fumigations, dry vapour baths, &c.

Benzoic Acid. *Acidum benzoicum*, seu *Flores benzoes*. A proximate principle existing in all the balsams, and principally in benzoin.

P. P. This acid is solid. It crystallizes in opake needles, very white, of a silky lustre, and very little ductile. Its smell is similar to that of benzoin, but this circumstance is owing to the presence of a small quantity of volatile oil, and it is almost impossible, in consequence of it, to obtain it perfectly inodorous. It has a sharp and slightly bitter taste, and its specific gravity is of 0.667.

C. P. It is composed of carbon, 74; oxygen, 20; hydrogen, 5. It is soluble in 22 parts of boiling, and in 200 of cold water; in 1 of boiling alcohol and in 2 of the same liquid at the common temperature. It reddens litmus and combines with salifiable bases. It melts when heated, and produces an acrid and suffocating vapour.

Prep. It is obtained by heating benzoin in an earthen vessel, surmounted by a long pasteboard cone, with a hole at its summit, the acid condenses in the interior of the cone, in small white needles. It is purified by dissolving it in nitric acid at 25°, of Baumé's areometer for acids; evaporating the liquor almost to dryness, dissolving again the residue in water, and causing this solution to crystallize.

Th. E. This acid possesses a very decided stimulant property, which is employed with advantage in chronic pulmonary catarrhs, to facilitate expectoration. It is seldom exhibited now a days. It enters into the composition of several officinal preparations, and among the rest into the *Tinctura camphoræ opiata*, U. S. and *Tinctura opii ammoniata*. E.

Solid Styrax, or Storax. *Balsamum storax. Styrax calomita.* Balsam furnished by the *Styrax officinalis*, Lin. a tree nearly related to the preceding, and native of the Levant, and of the south of Europe.

B. C. Trunk from fifteen to twenty-five feet high; leaves alternate, oval, white, and tomentose underneath; flowers white, in bunches of three or four at the extremity of the branches, resembling those of the orange tree; from ten to sixteen stamina; fruit, of the size of a cherry, dry, with a single cell containing from two to four seeds.

P. P. We meet in commerce with two sorts of styrax, 1st, the *Styrax in tears*, which is in transparent, red, and brittle grains, having a resinous and shining fracture, becoming soft between the fingers, of a strong smell of benzoin, and of an acrid and

bitter taste; 2d, the *Styrax in lumps*, is in masses of the same size as the preceding, brittle, smooth, of a reddish-brown colour, and mixed with saw-dust and other impurities. Its colour and taste differ but little from the former.

C. P. It contains, like the other balsams, benzoic acid, resin, and an empyreumatic oil. It dissolves in alcohol and ether. Boiling water takes up its aroma and taste.

Th. E. It was once very much employed as a stimulant in chronic pulmonary diseases. It is now almost discarded. It enters into several officinal preparations. Externally it is used as a stimulant topical remedy, and in fumigations.

D. & M. of Adm. Gr. x. to ʒss.——*Pilulæ a styrace*, D. (Styrax, 3 parts; opium and saffron, āā. 1 part.) Dose gr. iij. to vj.

Liquid Styrax. *Styrax liquidus*, is furnished by the *Liquidambar styraciflua*, a tree of the family *Amentaceæ*, which grows in America. It is liquid, opaque, of a greenish-gray, of a less agreeable smell than that of storax, and of an aromatic and acrid taste. It contains a great quantity of benzoic acid, and dissolves almost entirely in boiling alcohol. It is but little used at present, except externally. It is one of the ingredients of the *Compound styrax ointment*, P. (Liquid styrax, 5 parts; walnut oil, 10 parts; colophony, 12 parts; resin elemi and yellow wax, āā. 4 parts.)

Labdanum or Ladanum, is a gum-resin produced by the *Cistus creticus*, Lin. a shrub belonging to the family Cisteæ. It is in solid, cylindrical, flattened, and spiral pieces, of a gray colour, of an aromatic odour and agreeable taste. It possesses stimulant properties, but is no longer in use. It enters into the composition of several officinal preparations.

Poplar Tree Buds, *Gemmæ populi*, furnished by the black poplar tree, *Populus nigra*, Lin. are oblong, pointed, of a yellowish green, and covered with a resinous matter of an aromatic smell. They are no longer used except in the preparation of the *Populeum ointment*, P. (Poplar tree buds, 25; green leaves of poppy, of belladonna, of hyosciamus, and of the garden nightshade, āā. 6; axungia, 75.)

Family Araliaceæ.

[Prickly-ash. Tooth-ache Tree. *Zanthoxylum fraxineum*, Willd. A tall shrub indigenous to the southern states. P. U. The bark and capsules.

B. C. Stem straight, furnished with numerous prickles, from ten to fifteen feet high; leaves pinnate; folioles oval-lanceolate, sessile, serrulate, and almost

entire; common petiole unarmed; umbels axillary; flowers, perianthe five-parted; stamina, three, five, and six; pistils three to five; capsules three to five, containing each one seed. When rubbed with the fingers, they impart an odour similar to that of lemon oil.

P. P. Bark thin, gray externally, yellowish-white internally; taste pungent, aromatic, and exciting a copious discharge of saliva.

C. P. Dr. Staples has obtained from this bark a crystalline substance analogous to piperin, united with an oil possessing all the aroma, acridity, and warmth of the bark.

Th. E. This bark possesses very energetic stimulant and diaphoretic properties, analogous to those of mezereum bark. It is a popular medicine, often exhibited in regular practice, as a remedy in chronic rheumatism and syphilis. It is said that, by an internal and protracted use, it has, in several instances, produced salivation. It is recommended in malignant ulcers, both as an internal and external remedy, and several cases in testimony of its efficacy in this respect, are related in the Medical and Physical Journal, and in the Transactions of the London Medical Society. The *powder* is given in doses of ten, twenty, and even thirty grains. *Decoction*, (one ounce of bark, to a quart of water, boiled down one-third,) taken in doses of two or three ounces, every two or three hours. The tincture of the bark and capsules is a popular drink in chronic rheumatism.]

[Prickly Yellow-wood. *Zanthoxylum clava-herculis*, Lin. native of Jamaica, and very common in South Carolina, possesses the same properties.]

[Spikenard. Prickly-ash. *Angelica tree. Tooth-ache tree. Aralia spinosa*, Lin. A native shrub, found principally in the southern states. P. U. The bark, root, and berries.

B. C. Stem straight, simple, from eight to twelve feet high, with leaves only at the top, covered with numerous prickles, principally at the upper part of the stem; leaves very large, two or three-pinnate; folioles oval-pointed, slightly serrate; flowers in a fine ramose panicle at top, supporting about two hundred small hemispherical umbels, each composed of nearly thirty white flowers.

P. P. Bark thin, grayish externally, yellowish internally; slightly aromatic; of a bitter and acrimonious taste, somewhat similar to pyrethrum, and affecting considerably the tongue and salivary glands.

Th. E. A decoction of its bark and root acts as a gentle diaphoretic, and is frequently employed with advantage in rheumatic complaints. It enters into the composition of several panaceæ. The berries, or their tincture, have been successfully applied to obviate the aching of decayed teeth. A spirituous infusion is employed in Virginia in cases of violent colics.]

[Small Spikenard. False Sarsaparilla Root. *Aralia nudicaulis*, Lin. A perennial herbaceous plant, growing in shady and rocky woods, and in a rich soil, from Canada to Carolina. P. U. The root.

B. C. Stem naked, straight, bearing three umbels without involucrum; the stem and a single leaf rising together, about two feet high; flowers in simple umbels; calix superior, five-toothed; petals entire; five stamina; ovary inferior, surmounted by five styles and stigmas; fruit, a five-celled and five-seeded berry, crowned by the calix and styles.

P. P. Root sometimes many feet long, yellowish-brown, cylindrical, of the size of the small finger, fragrant, possessing a warm, aromatic, and sweetish taste.

Th. E. This root is extensively used by country practitioners, and it has acquired a great reputation as a substitute for sarsaparilla, in rheumatic and syphilitic affections, &c. It is also a useful tonic in a relaxed state of the stomach, with loss of appetite. It is used precisely in the same way as sarsaparilla, and is said not to be inferior to this foreign article.]

[Ginseng. *Panax quinquefolium*, Lin. A perennial plant, indigenous to North America and Chinese Tartary, growing principally in our western states. P. U. The root.

B. C. Stem erect, terete, green below, tinged with purplish red towards the top, where arise three divergent petioles, each bearing a ternate or quinate leaf, with petiolate, oval, acuminate, and dentate folioles; flowers small, white, in a globose umbel, on a peduncle at first short, but afterwards elongated; this peduncle is situated in the centre of the fork produced by the union of the petioles with the top of the stem; corolla, five oval fugacious petals; stamina five, crowned with heart-shaped anthers; pistils one, two, or three styles; fruit a berry of a fine vermilion colour, commonly reniform, with an apex or crown.

P. P. Root fusiform, from three to four inches in length, of a whitish-yellow colour, wrinkled transversely; its taste is pleasant, consisting of a mixture of sweet and bitter, together with some aromatic pungency.

Th. E. The medicinal properties of the ginseng have not been found, either in this country or Europe, to justify the high esteem in which the Chinese hold it. This substance has so very little activity, that if it deserves at all a place in the materia medica, it is only among the demulcents. It is principally used with us as a masticatory, and many persons chew it habitually with pleasure.]

Camphorata. Stinking Ground-pine. *Camphorosma monspeliaca*, Lin. A perennial plant of the family *Chenopodiæ*, very common in the south of France. Its odour is strong and similar to that of camphor, and it possesses an acrid and bitter taste. Its

properties are tolerably energetic, and it may be used in infusion as a diaphoretic.

Mexican Tea. *Chenopodium ambrosioides*, Lin. A plant of the same family, native of Mexico, and cultivated in France. Its odour is aromatic and very pleasant, its taste is acrid and bitter. It was once administered in infusion in hysteria and chronic catarrhs. The *Chenopodium botrys* is used in the same way and in the same cases.

There are many other substances ranged among stimulants, but as they are hardly ever employed at present, we shall not mention them.

CHAPTER VII.

ON SPECIAL STIMULANTS, THAT IS, THOSE THE ACTION OF WHICH IS MORE PARTICULARLY DIRECTED, TO ONE OR MORE ORGANS.

THE remedial substances of which we are going to treat under this head, vary considerably with respect to their physical and chemical properties, as well as in their action upon the whole economy. We shall therefore divide them into five classes, viz.

1st. Those acting upon the secreting vessels of the kidneys.

2d. Those which act upon the cutaneous system.

3d. Those the action of which is directed to the organs of generation.

4th. Those acting upon certain glands, and modifying the phenomena of absorption.

5th and lastly. Those which exercise their influence upon the nervous system.

§ 1. Remedies acting especially upon the Secreting vessels of the Kidneys, or Diuretics.

Amongst the remedial substances which have been mentioned in the preceding chapter, there were several which seem to stimulate the kidneys, and the mucous membranes of the genito-urinary organs, more powerfully than any other parts of the economy, and which impart to the urine a peculiar smell; but as their stimulant action is evinced, at the same time, most evidently on the whole economy, we have not thought proper to separate them from the other general stimulants, and we have confined ourselves to the assembling of them together at the end of the preceding chapter, as introductory to the study of those of which we are going to treat.

Diuretics, (διουρεω, I urinate,) act upon the general economy in the same manner as the stimulants, but they differ from them by the direct influence they exercise on the renal organs. In fact, although they stimulate but slightly the other organs, and are administered in the solid state, they act in a peculiar manner upon the kidneys and increase or modify the secretion of urine. This result bears no proportion to the general excitation they produce, and seems to be altogether independent. Thus urea

increases considerably the secretion of urine, without exercising, at the same time, any very marked action on the rest of the economy. It is, therefore, of great importance to establish a class of remedies truly *diuretic*, without admitting among them such substances as do not exercise a direct and especial influence on the secretion of urine; and we must not give this name, as was formerly practised, to all those substances which are capable of promoting in an indirect manner this secretion, whatever their action may be on the economy. This improper classification was carried so far, that tonics, stimulants, emollients, &c. were ranked in this class, only because their action was sometimes followed by diuresis.

The diuretic remedies are furnished by the three kingdoms of nature, and possess no peculiar physical or chemical character. They are generally administered in solution in a large quantity of aqueous menstruum, in order to assist their action by an increase in the mass of the liquids in circulation. Finally, it is principally in dropsies, gout, certain affections of the urinary passages, &c. that their employment is resorted to, as we shall mention in the history of each in particular.

Diuretic Animal Substance.

Urea. *Urea* is a proximate principle contained in the urine of a great number of animals.

P. P. This substance is in long, needle-shaped and prismatic crystals, or in colourless, thin, shining, elongated, transparent, inodorous scales, of a cool and sharp taste, and of a greater specific gravity than water.

C. P. Urea, according to Bérard, is composed of oxygen, 26.40; nitrogen 43.40; carbon, 19.40; and hydrogen, 10.80. It is unalterable in the air, and very soluble in water and alcohol. Thrown on live coals, it produces white vapours possessing a strong odour of ammonia.

Prep. Urine, concentrated to a syrup-like consistence, is treated with nitric acid, and the precipitate, which is a per-nitrate of urea, is decomposed by the sub-carbonate of potassa. The liberated urea is then dissolved in alcohol, and the liquor is permitted to crystallize.

[Mr. Henry, not being satisfied with the small product obtained by the above process, devised the following, which yields a larger quantity. By adding to fresh urine a slight excess of subacetate of lead a precipitate is formed, consisting of oxide of lead united to the various acids of the urine, together with the mucus and a great part of the animal matter; the decanted liquid is then treated with sulphuric acid in slight excess, to separate the lead,

and afterwards, in the progress of the evaporation, to decompose the acetates of soda and lime which may have formed. After having separated the white precipitate, concentrate rapidly over a steady fire, adding a portion of animal charcoal during the ebullition. When the whole has become a clear syrup, pass it through a linen of close texture, and then reduce it one-third by evaporation. On cooling, the liquid is converted into a yellow mass, crystallized in needles, formed of a great proportion of urea and some salts. The crystals being drained and pressed, are added to those obtained from the mother-waters treated in a similar manner. They are next treated with a very small quantity of carbonate of soda, with a view of separating any remaining acetate of lime, and then digested in alcohol of 38° to 40°. The alcoholic solution being filtered, and the alcohol separated by distillation, the urea remains, which may be crystallized anew from water, if necessary. The urea, as thus obtained, is in silky or prismatic needles, very soluble, and of a cooling taste.—*Journal de Pharmacie, Avril*, 1829.]

Th. E. Dr. Segalas's experiments have proved that this substance acts in a special manner on the kidneys, and promotes the secretion of urine, without exercising an appreciable influence upon any other part of the economy. He has consequently administered it as a powerful diuretic, and in many cases with success; and Dr. Fouquier, who has exhibited it at the hospital of *La Charité*, has obtained satisfactory results.

D. & M. of Adm. Dose, from gr. xv. to ℈j, and even more, but progressively, dissolved in sweetened distilled water.

Diuretic Mineral Substances.

Sub-carbonate of Potassa. *Potassæ sub-carbonas.* A salt, found in large quantities in the ashes of woody vegetables, and forming the base of the potash of commerce.

P. P. It is solid, white, deliquescent, inodorous, of an acrid and caustic taste, and crystallizes in rhomboidal scales.

C. P. This salt is composed of carbonic acid, 146.5, and potassa, 100. It is very soluble in water, effervesces with acids, which decompose it, and liberate from it the carbonic acid: heated, it melts above red heat without decomposing. It turns green the syrup of violets.

Incomp. Subst. Concentrated acids, lime water, sulphates of magnesia, of zinc, of copper, and of iron, alum, the hydrochlorates of ammonia, of iron, of mercury, nitrate of silver, tartrate of antimony and potassa, acetate of copper, &c.

Prep. It is obtained by burning in a brass basin, almost red

hot, a mixture of one part of nitrate of potassa, and two of impure cream of tartar.*

Th. E. The sub-carbonate of potassa administered internally in large doses in the solid state, or even in a concentrated solution, is a very energetic corrosive poison. In small doses, and in a suitable menstruum, it causes at first an irritation of the intestinal mucous membrane, capable of producing a purgative effect, and afterwards the increase of the secretion of urine. This last effect is very remarkable, even when it is administered in the dry state, and is followed neither with acceleration of the circulation, nor with an increase of heat, or any other general phenomena characteristic of a stimulant medication. It never provokes, however, the menses, nor diaphoresis; from hence we may conclude, that this salt being absorbed, and moving with the circulatory liquids, exercises a special influence on the kidneys.

It is employed in passive dropsies, gout, visceral engorgements, scrofula, &c. It is likewise administered in cases of gravel, calculi of the bladder. (See pure potassa.) It is employed also in preparing saline effervescent draughts, frequently used both in the United States and England, in certain disorders of the digestive functions, in bilious fevers, in spasmodic vomiting, &c.

D. & M. of Adm. Gr. x. to ʒj. in a mucilaginous menstruum, or in white wine.——*Liquor sub-carbonatis potassæ*, L. (Sub-carbonate of potassa, ℔ij.; distilled water, f.ʒxij.) Dose, from gut. x. to ʒj., in a suitable vehicle.——*Liquor kali carbonatis*, Pol. (Sub-carbonate of potassa, 1 part; distilled water, 2 parts.) ——*Liquor carbonatis potassæ*, R. (Sub-carbonate of potassa, 1 part; water, 3 parts.) Dose, from ℈j. to ʒj.——*Julepum potassæ sub-carbonatis*, Guy's H. (Solution of sub-carbonate of potassa, ʒvj.; mint water, ʒviijss.) Dose, from ℥ss. to ʒj., 2 or 3 times a day.——*Julepum salinum*, Guy's H. (Julep of sub-carbonate of potassa, ʒviij.; lemon juice, ʒiv.) Dose, ʒj., every 5 or 6 hours. ——*Solutio sub-carbonatis potassæ*, New York H. (Sub-carbonate of potassa, ℥ss.; water, f.ʒvi.)——*Solutio potassæ citratis*, New York, H. (Solution of sub-carbonate of potassa; lime juice, āā. equal parts, or in such proportions as to neutralize the mixture.)——*Haustus salinus*, Guy's H. (Julep of sub-carbonate of potassa, ʒj℈; lemon juice, and mint water, āā. ʒss.; tincture of colombo, ʒss.) For a dose.——*Rivière's anti-emetic mixture*, P. (Sub-carbonate of potassa, 1 part; lemon syrup, 16; lemon juice, 8; water, 48.)

Externally. *Alkaline pediluvium*, Paris H. (Sub-carbonate of potassa, ʒviij.; warm water, as much as necessary.)

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* [The sub-carbonate of potassa obtained by this process is always in a greater state of purity than that procured from a solution of the common potash, evaporated to dryness. This latter is, however, sufficiently pure for medical purposes, when the operation has been properly attended to, and principally when the solution has been made with cold instead of hot water, and has been evaporated until a pellicle forms on the surface. At this point the liquor is allowed to stand for some hours, in order to separate the muriate and sulphate of potassa, and then the process of evaporation is continued.]—Am. Eds.

Neutral Carbonate or Bi-carbonate of Potassa. *Potassæ bi-carbonas.* It does not exist in nature.

P. P. It is white, crystallizes in rhomboidal prisms with dihedral summits, inodorous, with a weak alkaline taste.

C. P. This salt contains twice as much carbonic acid as the preceding article. It is unalterable in the air, soluble in four parts of water at 15° Centig., (59° of Fahr.,) and is partly decomposed by boiling water. Heat transforms it into a sub-carbonate. It turns green the syrup of violets, and effervesces with acids.

Prep. By forcing, by means of a pump, carbonic acid gas into a concentrated solution of sub-carbonate of potassa, until crystals of bi-carbonate begin to form.

Th. E. It possesses the same virtues as the preceding, without having its causticity. It ought, of course, to be used in preference. The large quantity of carbonic acid it contains, and which it yields with facility, renders it more suitable than the sub-carbonate for the preparation of effervescent draughts.

D. & M. of Adm. The same as those of the preceding.——*Effervescent draught*, Dr. Paris. (Bi-carbonate of potassa, gr. x.; camphorated mixture, ℥j.; lemon juice, ℥ss.)——*Effervescent julep*, Dr. Paris. (Bi-carbonate of potassa, gr. x.; emulsion of almonds, ℥j.; syrup of red poppies, ℥j.; lemon juice, ℥iv.)

Nitrate of Potassa. *Potassæ nitras.* Nitre. Saltpetre. This salt is found in large quantities in nature, principally in the East Indies, in Spain, the kingdom of Naples, and in old walls, on the surface of which it effloresces.

P. P. It crystallizes in hexahedral prisms, often fluted, white, transparent, unalterable in the air. Nitre is inodorous, of a cool and sharp taste, followed by a slightly bitter aftertaste. Its specific gravity is 1.933.

C. P. Nitrate of potassa is composed of nitric acid, 53.45 and potassa, 46.55. It dissolves in five parts of cold and in its own weight of boiling water. It is insoluble in alcohol. It melts at a moderate heat, and on cooling forms a white and opaque mass, called *sal prunella.* It decomposes at a red heat, and fuses on live coals, causing them to burn more rapidly.

Incomp. Subst. Sulphuric acid, alum, the sulphates of magnesia, iron, zinc, and copper.

Prep. Treat with water the rubbish containing plaster, in order to dissolve the nitrates of potassa, of lime, and magnesia, and the hydro-chlorates they contain; then pour into this liquor a solution of sulphate of potassa, which transforms the nitrates of lime and magnesia into nitrate of potassa; decant and concentrate the liquor, and set it to crystallize. In order to purify the nitre

thus obtained, it must be washed with water saturated with nitrate of potassa.

Th. E. In large doses this salt produces a lively irritation of the gastro-intestinal surface, with nausea, vomiting, alvine evacuation, and serious accidents. Administered in small doses, it seems to exercise a special influence on the quantity of the secretion of urine. The partisans of the *contra-stimulus* doctrine, do not consider nitre as a diuretic. They pretend, and it is likewise the opinion of Dr. Alexander, of Edinburgh, that this salt, taken in small doses, slackens the circulation, diminishes the animal heat, and in short, acts as the *Digitalis purpurea*. Indeed they exhibit it in order to abate inflammations, and principally those of the internal organs, &c. The nitrate of potassa is administered as a temperant and a diuretic, in the second period of acute inflammations of the urinary passages, in serous effusions, in inflammatory fevers, in certain cases of icterus, in rheumatism, &c. Externally it is employed in gargles and cooling lotions.

D. & M. of Adm. As a diuretic, from gr. vj. to xx. in ℔j. of mucilaginous drink. As a stimulant, from gr. xij. to ʒj. and even ʒij. as a contra-stimulant.——*Stahl's temperant powder*, P. (Nitrate and sulphate of potassa, āā. 9; red sulphuret of mercury, 2.)——*Pulvis nitrosus temperans*, Pr., R. (Nitrate and sulphate of potassa, āā. e. p.)——*Pulvis refrigerans*, Dex. (Nitrate of potassa and oleo-saccharum of lemon, āā. 1; tartrate of potassa, 6.) Dose from ℈j. to ʒss.——*Aperitive mixture*, Paris H. (Nitrate of potassa, ℈j. decoction of the aperient roots, ʒv.; syrup, ʒij.) Dose one table-spoonful.——*Mixture of nitrate of potassa*, Paris H. (Nitrate of potassa, gr. xviij.; decoction of dog-grass root, ʒiv.; syrup, ʒij.——*Emulsion of nitrate of potassa*, Guy's H. (Nitrate of potassa, ʒj.; emulsion of almonds, ℔j.)——*Trochisci nit. pot.* E. (Nitrate of potassa, 1; sugar, 3.) Dose No. 1 to 2 every two or three hours.——*Julepum potassæ nitratis*, Guy's H. (Nitrate of potassa, alcoholized nitric acid, āā. ʒiij.; syrup of lemon, ʒiv.; mint water, ʒxss.) Dose ʒj. 3, 4, or 6 times a day.——*Gargarisma potassæ nitratis*, New York H. (Barley water, Oj.; nitrate of potassa, ʒvj.; honey, ʒij.)

Acetate of Potassa. *Potassæ acetas.* This salt is found in the sap of almost all vegetables.

P. P. It is in the form of small white and brilliant scales, extremely deliquescent, of a sharp taste, and of a weak but peculiar odour. Its specific gravity is 2.10.

C. P. It is very soluble in alcohol. Heat decomposes it and deprives it of its acid, which is disengaged.

Incomp. Subst. Most acid fruit, and acids, and a great number of salts.

Prep. Saturate a solution of sub-carbonate of potassa with distilled vinegar, and evaporate the liquor to dryness.

Th. E. In small doses, the acetate of potassa is diuretic, and therefore employed to fulfil the same indications as the preceding substances, and principally in dropsies, icterus, &c. In large doses it is a very gentle cathartic, but very little used for this purpose.

D. & M. of Adm. As a diuretic, from ℈j. to ʒj. in solution, several times a day. As a cathartic, from ʒiv. to ℥j. and above.——*Liquor kali acetati*, Pr., B., R., Pol., Den. (Acetate of potassa, 1; distilled water, 2.) Dose from ʒj. to ʒij. in a mixture.——*Diuretic mixture*, Paris H. (Acetate of potassa, ʒij.; vinegar syrup, ℥j.; cinnamon water, ʒj.; infusion of lime tree flowers, ʒiv.) Dose a table-spoonful.

Sub-carbonate of Soda. *Sodæ sub-carbonas.* Mineral alkali. It exists in the ashes of almost all vegetables growing on the sea shores, and especially in those of the *Salsola Soda*, Lin. It is found likewise also contained in the waters of some lakes, but in an impure state and mixed with other salts.

P. P. It is white, crystallized in rhomboidal prisms with truncated summits, efflorescent, inodorous, of an acrid taste, and slightly caustic.

C. P. It is composed of carbonic acid 100, and soda 141.39; it contains 62.69 per cent. of water of crystallization. It is soluble in two parts of cold, and in a lesser quantity of boiling water. It turns green the syrup of violet, undergoes the aqueous and ignited fusion without decomposition, and effervesces with acids.

Incomp. Subst. The same as for the sub-carbonate of potassa. (See page 231.)

Prep. Treat the soda of commerce with cold water, evaporate the liquor to dryness, expose the residue for a fortnight to the air, dissolve anew in water and let the solution crystallize.

Th. E. Its employment is the same as that of the sub-carbonate of potassa, but it is more frequently exhibited, because it is not caustic. It is preferred in cases of acidity of the stomach, in dropsies, scrofulous diseases, and hooping-cough. In small doses, and diluted in water, it proves a diuretic.

D. & M. of Adm. Dose, from gr. x. to ʒss. in the solid state united with bitter extracts.——*Pilulæ sodæ*, Guy's H. (Sub-carbonate of soda, ʒiij.; medicinal soap, ʒj.; essential oil of caraway, gut. x.; water, q. s.) Dose, from gr. x. to ʒj. two or three times a day.——*Sodæ sub-carbonas exsiccatus*, U. S., L., D. Dose, from gr. x. to gr. xv.——*Pilulæ sodæ sub-carbonatis*, New York H. (Effloresced soda, ʒiij.; soap ℥ss.) For four grain pills.

Bi-carbonate of Soda. *Sodæ bi-carbonas.* It does not exist in nature.

P. P., C. P., and Prep. (See Bi-carbonate of potassa, p. 233.)

Th. E. This salt possesses the same properties as the bi-carbonate of potassa; it is however more efficacious. It has been of late very much used in the treatment of calculous affections, when they are produced by a superabundance of uric acid. In small doses it facilitates digestion, and restores in a very short time the functions of the stomach, especially when they have been disturbed by the formation of a too great quantity of acid. Mr. Darcet, who has called the attention of practitioners to this substance,

thinks that it acts then chemically by uniting with the acid contained in the *primæ viæ*.

D. & M. of Adm. Gr. xij. to ʒss. in an aqueous menstruum.——*Digestive lozenges*, F. M. (Bi-carbonate of soda, 5; white sugar, 95; mucilage of gum tragacanth, q. s.; essential oil of mint, 3; for 18 grain lozenges, each of which contains 1 grain of bi-carbonate.) Dose, No. ij. to iv. several times a day, before and after meals.——*Soda powders*. (Bi-carbonate of soda, ʒss.; tartaric acid, gr. xx.; in separate papers.

Acetate of Soda. *Sodæ acetas*. It is always the product of art.

P. P. This salt crystallizes in long flattened prisms, white, unalterable in the air, of a sharp and bitter taste.

C. P. It dissolves in three parts of cold, and in a lesser quantity of boiling water; it is hardly soluble in alcohol. Heated, it melts in its water of crystallization, and decomposes at a high temperature by yielding its acetic acid. The crystals contain one-third of their weight of water of crystallization.

Prep. Saturate some sub-carbonate of soda with distilled vinegar.

Th. E. The same as those of the acetate of potassa, (see p. 234.) but it appears to be less active, and is much less employed.

D. & M. of Adm. From ʒij. to ʒss. in a watery menstruum.

Medicinal or Amygdalate Soap. *Sapo medicinalis. Sapo ex soda amygdalinus*. It is the product of the combination of oil of sweet almonds and soda.

[The White, Hard, Spanish Soap, *Sapo hispanicus albus*, which is generally used in this country, and in Great Britain, for medicinal purposes, is a compound of olive oil and of a solution of soda, prepared in the same way as the amygdalate soap, and possessing the same medicinal properties; but it is very seldom found in commerce sufficiently pure to be exhibited internally with any certainty of success. It would then be desirable that every apothecary should prepare his own medicinal soap, as is generally the case on the continent of Europe. The physical and chemical properties of the white Spanish soap are very nearly the same as those of the one just mentioned. We shall therefore treat of both in this present article.]

P. P. It is solid, white, somewhat consistent, of an agreeable smell, of a slightly alkaline taste, and of a greater specific gravity than water.

C. P. This substance is composed of oleate, margarate, and stearate of soda. It is very soluble in water, alcohol and ether; heated, it melts, puffs up, and decomposes; exposed to the air, it loses some of its weight, dries up, and is altered.

INCOMP. SUBST. Acids, all the soluble salts, except those having for base soda, potassa, and ammonia, and tanning substances.

PREP. Let 210 parts of oil of sweet almonds act upon 100 of solution of soda, at 36° of Baumé's areometer for salts; agitate the mixture and pour it into moulds when it has acquired the consistence of butter.

TH. E. Taken internally, soap stimulates the digestive organs, and seems to act principally as a diuretic, without, however, accelerating the circulation. Its employment, when too long continued, debilitates all the tissues; for it produces general paleness, swelling or emaciation, debility, passive hæmorrhage, and other symptoms of atony. It is exhibited in cases of induration, engorgement of the abdominal viscera, scrofulous tumours, gout, jaundice, calculus biliaris, habitual constipation, &c. Like the other alkaline preparations, it is recommended in gravel of the bladder, and its employment may be very advantageous. Soap water is very useful in cases of poisoning by acids, in order to neutralize these substances. Finally, soap enters into the composition of a great number of pilulary masses. This remedy is employed externally as a stimulant in glandulous obstructions, indolent tumours, &c.

D. & M. OF ADM. From gr. x. to ʒj. in pills.——*Pilulæ saponis*, P. (Amygdalate soap, 125; marsh mallow root, 16; nitrate of potassa, 4.) Dose from gr. x. to ℈ij.——*Pilulæ aloeticæ*, U. S., E. (Socotorine aloes and medicinal soap, āā. equal parts.)——*Pilulæ saponis cum opio*, L. (Pulverized opium, ʒss.; hard soap, ʒij.) for three grains pill.——*Compound soap pills*, PARIS H. (Medicinal soap, gr. ij.; calomel and resin of jalap, āā. 1.)——*Sapo jalapinus*, B., PR., POL., (Amygdalate soap and resin of jalap, āā. equal parts; alcohol, as much as necessary to form a mass.) Dose from gr. vj. to x.

Externally. Dissolved in water or alcohol, in lotions, fomentations, frictions, &c.——*Linimentum saponis compositum*, U. S. (White soap, ʒxij.; camphor, ʒij.; oil of rosemary, f.ʒij.; alcohol, Cj.)—L. (Hard soap, ʒiij.; camphor, ʒj.; spirit of rosemary, Oj.)——*Tinctura saponis camphorata*, vulgo *Linimentum saponaceum*, E. (Hard soap, ʒiv.; camphor, ʒij,; oil of rosemary, ʒss.; alcohol, ℔ij.——*Linimentum saponis cum opio*, U. S. (Compound liniment of soap, U. S. Cj.; opium, ʒj.)—NEW YORK H. (Compound soap liniment, L. f.ʒjss.; tincture of opium, f.ʒss.)——*Tinctura saponis et opii*, E. (Camphorated tincture of soap, E. ℔jiss.; opium, ʒj.)——*Spiritus saponatus*, A. (Medicinal soap, 24; sub-carbonate of soda, 1; spirit of lavender, 48; alcohol, 144.)——*Saponaceous lotion*, PARIS H. (Medicinal soap, 2 parts; alcohol, 16 parts.)——*Ceratum saponis*, U. S., L. (Hard soap, ʒviij.; yellow wax, ʒx.; semivitreous oxide of lead, ℔j.; olive oil, Oj.; vinegar, Cj.)——*Emplastrum saponis*, L., D. (Hard soap, ℔ss.; lead plaster, ℔iij.)—E. (Semivitreous oxide of lead, 4 parts; gum plaster, 2 parts; soap sliced, 1 part.)—P. (Medicinal soap, 12 parts; wax, 10 parts; simple plaster, 200 parts; water, as much as necessary.)——*Emplastrum saponatum*, PR., POL., B., R. (Medicinal soap, 6; wax, 12; camphor, 1; simple plaster, 72.)

Diuretic Remedies furnished by the Vegetable Kingdom.

Family Liliaceæ.

Squill. *Scillæ* seu *Squillæ radix.* *Scilla maritima*, Lin. A plant growing on the sea shores. P. U. The scales of the bulb.

B. C. Ovoid bulb of the size of the fist, formed of numerous scales, brown externally; thick, fleshy, and viscous, internally; radical leaves oval, lanceolate, of a deep green colour; scape from two to three feet high; flowers white, peduncular, in a terminal spike; corolla, six spreading petals; stamina with simple filaments; fruit, a three-sided capsule with three cells.

P. P. The scales of squill are found in commerce in a dry state, and in wrinkled, irregular, and brownish slips, of a weak smell, and of a very acrid and bitter taste.

C. P. This substance contains, according to Mr. Vogel, *scillitin*, 35; tannin, 24; gum, 64; lignin, 30; and traces of saccharine matter and of citrate of lime.

Scillitin, a proximate principle discovered by Vogel, is white, brittle, transparent, friable, deliquescent, very soluble in water, alcohol, and vinegar. This seems to be the active principle of squill. Mr. Tilloy says that this substance is a mixture of an uncrystallizable sugar and two peculiar matters, the one acrid and the other very bitter.

Th. E. The direct action of the squill upon the stomach provokes nausea, vomiting, and colics; but when it is absorbed, its influence is felt by the kidneys and produces an increased secretion of urine, or even strangury and emission of bloody urine. It exercises likewise a very decided stimulant action on the secretion of the mucous membranes, and more especially on those of the bronchia. In large doses it acts on the nervous system like the acrid poisons, and produces convulsions, &c. It seems also to diminish the frequency of the pulse.

It is principally as a diuretic and a general excitant that this substance is exhibited in dropsies, and in cases in which it is necessary to provoke the secretion of urine. It is likewise recommended in the last stage of pulmonary catarrhs and chronic coughs, in order to facilitate expectoration. Finally, administered in such manner as to produce continual nausea, it may become efficacious in the treatment of certain tubercular affections. Squill is seldom administered alone; it is frequently associated with opium, calomel, and other energetic remedies, agreeably to the indication to be fulfilled.

D. & M. of Adm. Powder, from gr. ij. to gr. x. in pills.——*Pilulæ scillæ*, U. S. (Squill, ʒj.; castile soap, gr. xxiv;) for 40 pills.——*Pilulæ scillæ compo-*

sitæ, L. (Squill, ʒj. ginger, hard soap, āā. ʒiij.; ammoniacum, ʒij.)—D. (squill, ʒj.; ginger, ʒij.; oil of aniseed, gut. x.)——*Pilulæ scilliticæ*, E. (Squill, ℈j.; ammoniacum, cardamom seeds, extract of liquorice, āā. ʒj.)—P. (Squill, 1 part; gum ammoniac, 3 parts.)—Den. (Squill, swallow-wort root, and gum ammoniac, āā. 4 parts; medicinal soap, 8 parts; balsam copaiba, 1 part.)——*Bolus of squill*, Paris H. (Squill, gr. vj.; sulphate of potassa, gr. ij.; oxymel of squill, a sufficient quantity;) twice a day.——*Pilulæ scillæ cum hydrargyro*, New York H. (Squill, ʒiij.; calomel, ʒj.; syrup, q. s.)—Guy's H. (Mass of compound squill pill, L., ʒiv.; gray oxide of mercury, ℈j.;) for forty pills. Dose No. 3 twice a day.——*Dr. Paris's expectorant pills*, (Squill, ʒjss.; extract of hyoscyamus, ℈ij.;) for 30 pills.——*Pulvis scillæ compositus*, F. (Squill, 1 part; tartrate of potassa; 4; nitrate of potassa, 3; aromatic powder, 2.) Dose from gr. x. to xx.—Guy's H. (Squill, 1; tartrate of potassa, 9.) Dose from gr. xx. to xxx.——*Diuretic powder*, Dr. Paris, (Squill, gr. iij.; opium, gr. ss.; cinnamon, gr. x.;) Dose 2 a day.——*Expectorant powder*, Paris H. (Squill, gr. xii.; ipecacuanha, ℈j.) In several doses.——*Tinctura scillæ*, L., D., P. (Squill ʒiv.; alcohol, Oj.)—E. (Squill, ʒiv. proof spirit, ʒxvj.) Dose from ♏xx. to ♏xxx.——*Vinum scilliticum*, P. (Squill 1; Malaga wine, 16.) Dose from ʒss. to ʒj. in any menstruum.——*Acetum scillæ*, U. S. (Squill, ʒij.; vinegar, Oijss.; alcohol, f.ʒiij.)—L., D. (Squill, ℔j.; distilled vinegar, Ovj.; proof spirit, Oss.)—E. (Squill ʒj.; vinegar, ʒxv.; alcohol, ʒjss.)—P., Den., F. (Squill, 8; vinegar, 96; alcohol, 1)—Pol., Pr., B. (Squill, 2; vinegar, 12; alcohol, 1.)—R., A. (Squill, 1; vinegar, 6.)——*Mel scillæ acetatum*, U. S., L., D. (Clarified honey, ℔iij.; vinegar of squill, Oij.)—P., Den., Pol., Pr., R., B. F. (Vinegar of squill, 1 part; honey, 2 parts.) Dose from ʒiv. to ʒj. in a mixture or in a suitable menstruum.——*Diuretic mixture*, Paris H. (Oxymel of squill, 8; mint water, 16; infusion of wall pellitory, 64; spirit of nitre, 1.)——*Mel scillæ*, P. (Squill, 1; water, 24; honey, 12.)——*Syrup scillæ*, U. S., E. (Vinegar of squill, Oij.; sugar, ℔iijss.) Dose from ʒj. to ʒij. in an aromatic mixture.——*Syrupus scilliticus*, F. (Squill, 2; ginger, 1; hyssop, 4; mint water, 48; simple syrup, ʒij. to ʒss.)

Family Asparagineæ.

Sparrow-Grass. *Radix asparagi. Asparagus officinalis*, Lin. A perennial plant, indigenous to Europe, and growing in cultivated places. P. U. The root.

B. C. Stem straight, cylindrical, smooth; leaves capillary, fasciculate; flowers small, of a greenish yellow, unisexual; calix campanulate, style trigonal, three stigmas; fruit, pisiform and three-celled berries.

P. P. This root is scaly, cylindrical, fleshy, giving birth to numerous cylindrical radicles, very long, of the size of a quill, of a gray colour externally, white internally, of a mucilaginous and bitter taste.

C. P. This plant contains, according to Messrs. Vauquelin and Robiquet, *asparagin*, a green resinous matter, wax, albumen, phosphate and acetate of potassa, and mannite. Its active principles are soluble in water.

Asparagin is solid, hard, white, in rhomboidal prisms, of a nauseous taste and inodorous. It is partly soluble in water, and insoluble in alcohol.

Sparrow-grass root communicates to urine a very disagreeable smell, and seems to promote this secretion without acting in an

appreciable manner on the rest of the economy. Not only the root, but the whole plant possess these properties, which seem to depend upon the asparagin. It is frequently used as a diuretic and an aperitive in dropsies, diseases of the urinary passages, and in general in all the cases in which an increase of the secretion of urine is indicated, without producing a great excitation in the organs.

D. & M. of Adm. *Decoction*, ℥ss. to ℥j. to Ibij. of water.

Butcher's Broom. *Rusci radix. Ruscus aculeatus.* A small shrub, native of Europe, with persistent leaves, growing in shadowy places, of the size of the little finger, knotty, long, and marked with close circular lines. It possesses properties analogous to those of the sparrow-grass, and they are frequently employed in similar cases, and in the same manner.

Family Ericineæ.

Bear's Berry. Bear's Whortleberry, &c. *Folia uva ursi. Arbutus uva ursi*, Lin. A shrub, native of Europe and North America, very common on the mountains. P. U. The leaves.

B. C. Stem repent; leaves alternate, thick, oval, entire, shining, of a deep green colour underneath, lighter on the upper surface; flowers in a terminal capitulum, eight or ten in number, each accompanied with three bracteæ; calix spreading, very small; corolla tubular, urceolate, ten stamina, anthers red; fruit, a pisiform and dry berry.

P. P. These leaves differ from box berry leaves only by their having no prominent transversal nerves, and by their shagreen-like surfaces; they have rather an agreeable smell, and an astringent and slightly bitter taste.

C. P. They contain tannin, mucus, a bitter extractive matter, resin, gallic acid, &c, Water takes up its active principles.

Th. E. This plant, the use of which has been highly recommended in the treatment of calculous diseases, and which was considered as capable of dissolving the calculi of the bladder and of the kidneys, possesses a decided action upon the urinary organs, the secretion of which it increases. It is therefore frequently used in cases of gravel, blennorrhagia, chronic catarrh of the bladder, and other affections requiring the exhibition of diuretics.

D. & M. of Adm. *Powder*, from ℈j. to ℥j. *Decoction* or *infusion*, ℥ij. to ℥iv. to Ibij. of water.——*Anti-nephretic powder*, Ferriar. (Pulv. uva ursi, and Peruvian bark, aa. ℈j; opium, gr. ss.) 4 times a day; the patient is to drink ℥ij. of lime water after each dose.

[Pipsisewa. Winter Green. *Chimaphila umbellata*, Pursh. *Pyrola umbellata*, Lin. A perennial evergreen plant, found from Canada to Georgia. P. U. The whole plant.

B. C. Stem semi-procumbent, hard, and woody, upper part reddish, from six to eight inches high; leaves generally whorled-like and two whorls on each stem, sometimes alternate and irregularly situated, lanceolate, ovate, deeply dentate, of a shining green colour; scape corymbiform; calix small, five-parted, persistent; flowers greenish-white tinged with red; corolla consisting of five roundish, concave, and spreading petals; anthers purple; germ globular; stigma thick and sessile; style persistent; capsule roundish, five-angled, containing numerous and chaffy seeds.

P. P. Taste bitter and astringent.

C. P. According to Dr. Mitchell, this plant contains tannin, gum, and resin.

Th. E. Pippsissawa is very nearly related to *Uva ursi* in its botanical affinity, as well as in its remedial properties. It was used by our native Indians in inflammatory diseases. Its astringent, tonic, and sudorific properties had long been appreciated before its diuretic virtues were ascertained. Dr. Sommerville, of the British army, seems to have been the first who introduced this article to the particular notice of the profession as a valuable diuretic. It has been since employed, both in England and in this country, in the treatment of dropsy, and it is said to be distinguished by activity and certainty of operation, with this peculiarity, that, while it stimulates the kidneys to an increased effort, it acts on the stomach as a tonic, with so much effect, that it has been prescribed for the cure of intermitting fevers. During the American war, it was employed as a tonic remedy in typhus fever.

It is commonly administered as an infusion in the same manner as the uva ursi; or in the form of extract, in doses of fifteen grains.]

[Mountain Tea. Partridge Berry. *Gaultheria procumbens*, Kalm. A native evergreen, growing in the most arid and mountainous parts of the country. P. U. The leaves.

B. C. Stem erect, about one span high, terminated by a few oval, smooth, and coriaceous leaves; flowers solitary, seldom exceeding three or five on one stem; fruit, a small five-celled capsule, with many seeds inclosed within the fleshy calix, which assumes the appearance of a round scarlet perforated berry of the size of a pea.

Th. E. This plant is one of the principal articles of the materia medica of some of our Indian tribes, and a popular remedy in many parts of the country, where the infusion is used after great fatigue and undue exposure to heat and cold. It is a stimulant anodyne, and it is said to have been very useful in cases of asthma. The whole plant contains a considerable quantity of essential oil, which possesses the same properties, and is used, in the eastern states, in cordials.]

Family Rhamneæ.

[Evergreen Cassine. South Sea Tea. *Cassine caroliniana*, Lam. *Ilex vomitoria*, Aiton. A native shrub of Carolina and West Florida, employed by the Indians to prepare their black drink, so much in use among them not only as a medicine, but also as a drink in their ceremonies. It is considered as one of the most powerful diuretics hitherto discovered. In large doses it produces violent vomiting.]

Family Corymbiferæ.

[Philadelphia Flea Bane. Scabious. *Erigeron philadelphicum*, Lin. A perennial plant, found all over the United States, and now introduced in Europe, where it grows spontaneously. P. U. The whole plant.

B. C. Stems from one to five, pubescent, two or three feet high; radical leaves oblong, base cuneate, decurrent on a long petiole, nearly obtuse; the cauline sessile, nearly amplexicaul, entire; floral leaves small, lanceolate; flowers numerous, radiate, disk yellow, rays white; common receptacle bearing all the florets, flat, naked, and pitted.

P. P. This plant has a peculiar aromatic smell, rather pleasant; its taste is slightly bitter and aromatic.

Th. E. Flea bane deserves the attention of physicians, for its diuretic and antilithic properties. It is a popular remedy in dropsy, strangury from blisters, and gravelly affections. Dr. Wistar has used it with success in several instances of gout and hydrothorax: in all cases it operates powerfully as a diuretic and diaphoretic. The plant should be collected whilst in blossom, and employed as a decoction and an infusion.]

[The Canada Flea Bane. *Erigeron Canadense*, and the Various-leaved Flea Bane, or Sweet Scabious, *Erigeron heterophyllum*, possess the same properties as the preceding plant.]

Family Urticeæ.

Wall-pellitory. *Parietariæ herbæ. Parietaria officinalis*, Lin. A perennial plant, native of Europe, and growing abundantly on old walls. P. U. The whole plant.

B. C. Stem herbaceous, erect, cylindrical, hairy, reddish; leaves oval, hairy; flowers polygamous, axillary, very small; calix tubular, persistent, four-divided; stamina, four; fruit, a small ovoid capsule, inclosed in the calix.

P. P. This plant is inodorous; its taste is herbaceous and slightly salt.

C. P. It contains a great quantity of nitre and mucilage.

Th. E. It possesses diuretic properties, for which it is indebted to the nitre it contains; otherwise it is emollient and cooling. It is frequently used in inflammatory affections of the urinary passages.

D. & M. of Adm. Decoction, a handful to Ibij. of water. Expressed juice, ℥ij. to ℥iv.——*Distilled water*, P., ℥ij. to ℥iv. Decoction in a glyster.

Family Rutaceæ.

Crenate Diosma or Bechu. *Folia bechu. Diosma crenata*, Thunberg. Small shrub, growing in the neighbourhood of the Cape of Good Hope. P. U. The leaves.

B. C. Stem from one to two feet high, ramose; leaves alternate, tough, elliptical, with a short petiole; flowers large, white, solitary in the axilla of the leaves; fruit, stellate capsules, composed of five shells, each containing a shining seed, of a fine black colour, and similar to that of flax.

P. P. The bechu leaves are elliptical, lanceolate, one inch long, by five to six lines wide, very minutely dentated on their borders; upper surface smooth, and of a light green, but paler underneath, with glandular dots. Their odour is strong and penetrating, and their taste is bitter and aromatic.

C. P. According to Mr. Cadet de Gassicourt's analysis, they contain essential oil 0.665; gum, 21.17; aqueous and alcoholic extract, 5.17; chlorophyllin, 1.10; resin, 2.151. Their active principles are soluble in water and alcohol.

Incomp. Subst. Infusion of galls, and sulphate of iron.

Th. E. This substance, newly introduced into the materia medica, and already employed in Germany and England, seems to have a special action on the urinary organs. Dr. M'Dowell's observations, confirmed by those of Dr. De Fermon, and of several other practitioners, leave no doubt whatever respecting the efficacy of the bechu leaves in chronic catarrhs of the bladder, retention of urine produced by the debility of this organ, in the affections of the prostate gland, gravel, and in other cases in which diuretics are indicated. Dr. Liesching, an inhabitant of the Cape of Good Hope, considers them as a stimulant and sudorific remedy, very efficacious in cutaneous eruptions, rheumatism, and diseases of the urinary passages.

D. & M. of Adm. Powder, ℈j. to ʒss. a day, in white wine. Infusion, ʒj. to ʒij. to Ibij. of water.——*Tincture*, ʒij. to ʒiv.——*Compound infusion of bechu*, Dr. M'Dowell. (Infusion of bechu, ℥vij.; tincture of bechu, and cubebs, āā. ʒj.) ʒj. three times a day.

Colchicum autumnale, *Digitalis purpurea*, and other very active substances, are also energetic diuretics frequently exhibited; but as these medicines possess other more decided and important properties, we shall postpone speaking of them at present.

The roots of Smallage, *Apium graveolens*, Lin., and of Common Parsley, *A. petroselinum*, Lin., of the family *Umbelliferæ*, have an aromatic and agreeable smell, and a faint taste. They possess some diuretic virtues, and are occasionally employed in an infusion, in the dose of ℥j. to ℔ij. of water. The same is the case with respect to the root of *Eryngium campestre*, Lin., another plant of the same family, the taste of which is bitter, and slightly aromatic.

Pareira-brava Root. *Cissampelos pareira*, Lin. A climbing plant, native of Brazil, of the family *Monospermeæ*. It is woody, fibrous, hard, twisted, of the size of a child's arm, brown externally, of a yellowish-gray colour internally, and marked with concentric circles, inodorous, and of a bitter taste. It has been highly recommended as lithontriptic; but at present it is only known as a powerful diuretic, which may be used with success in cases requiring the employment of remedies of this kind, and especially in chronic catarrhs of the bladder. However it is very seldom used. It may be administered in powder, in the dose of ℈j. to ʒj., and in decoction, in that of ʒiij. to ℔ij. of water, reduced to one half.

Several other plants are also ranked amongst diuretic substances, but, on account of their inconsiderable virtues, and being now seldom used, we shall simply indicate their names.

Rest-harrow, *Ononis spinosa* and *O. natrix*, Lin., of the family *Leguminosæ*, the roots of which are administered in decoction. Caper-plant, *Capparis spinosa*, Lin., of the family *Capparideæ*. Rupture-wort, *Herniaria glabra*, Lin., which is still used in infusion. Ceterach, *Asplenium ceterach*, Lin., of the family *Filiceæ*. Winter Cherry, *Physalis alkekengi*, Lin., of the family *Solaneæ*, the berries of which are red, juicy, acidulous, and slightly bitter, and are sometimes administered as an infusion, and enter into the composition of several officinal preparations.

§ II. Stimulant Remedies which act especially on the Skin.

We call *sudorifics* and *diaphoretics*, (διαφορεώ, I carry through,) all the remedies producing an increase of cutaneous perspiration. This effect may be produced by a great number of substances, the nature and the *modus operandi* of which are altogether different. Indeed, most of the general stimulants, which we have already mentioned, several narcotics, and even the temperant remedies themselves, exhibited in a particular manner, and under peculiar circumstances of temperature and situation, fre-

quently provoke diaphoresis, without permitting us to say that they act in a special manner upon the skin; for it is evident that this effect is only secondary, and is the result of their general action on the economy. There are, however, substances which appear to exercise on the cutaneous system an influence altogether special, and which does not seem to be in a strict relation to that which they exercise upon the rest of the economy. The increase of perspiration may be owing to the effects of this stimulant action upon the skin, without, however, being a necessary consequence of it. Sulphur and its preparations, for instance, act unquestionably upon the cutaneous system, and they never produce perspiration. Their action is of a peculiar nature, inexplicable in the present state of our knowledge. Besides, most of these remedies require to be administered in a warm and abundant aqueous menstruum, in order that they may act as sudorific, and it is necessary that the patient should be in an atmosphere of a mild temperature, in a state of perfect rest, and protected from currents of cold air. The remedies which act upon the skin are exhibited in many diseases, and principally in herpetic affections, and other chronic phlegmasiæ of the skin, in gout, rheumatism, syphilis, dropsies, certain catarrhal affections, &c.

Mineral Substances.

Brimstone. Sulphur. *Sulphur.* A simple body, existing in large quantities, in a natural state, in volcanic soils, called *Solfataras,* and combined with other bodies in the state of sulphurets and sulphates.

P. P. Sulphur is solid, of a lemon-yellow colour, inodorous, almost tasteless, crepitating and breaking when slightly heated, or pressed in the hand; of a shining and crystalline fracture; its specific gravity is 1.99.

C. P. Sulphur is unalterable in the air at a common temperature: heated, it melts at 107° or 109° Centig. (225° or 229° Fahr.) After being in fusion for some time it becomes of a reddish-brown colour, and remains soft for some time. At a higher temperature it inflames, burns with a pale blue flame, and forms sulphurous acid, the odour of which is very strong and characteristic: if not in contact with the air it is reduced to a yellow gas, which condenses into a crystalline yellow powder, called *flowers of sulphur, sublimed sulphur, sulphur sublimatum;* this is the form under which this substance is employed in medicine. It is insoluble in water and alcohol; but it dissolves in fatty and in essential oils. It combines with almost all the simple metallic substances, and others, and forms with them sulphurets; by its union with hydrogen it constitutes hydro-sulphuric acid gas.

Prep. It is obtained by subliming common brimstone in a large cast-iron vessel, communicating with a chamber, which is used as a receiver. By means of this apparatus sulphur may be obtained either in masses or in powder. For medicinal use sublimed sulphur must be washed, in order to remove a small quantity of sulphuric acid which is formed during the operation.

Th. E. Administered internally in large doses, sulphur acts as a purgative; but taken in less quantity, it increases animal heat, and the acceleration of the pulse, it promotes the secretion of the bronchiæ, of the skin and kidneys; in a word, it acts as a stimulant. In these cases it seems to have been absorbed and transformed, partially at least, into hydro-sulphuric acid; for, the intestinal gases, urine, perspiration, breath, and the other secretions, acquire the fetid smell peculiar to this gas, and even the silver ornaments which the patient wears about him become sometimes black, which is owing to the formation of a small quantity of sulphuret of silver. The exhibition of sulphur continued for a length of time, is capable of producing very serious consequences caused by its very stimulating action. It is thus that hæmorrhage, agitation, fever, &c. &c. often attend this medication. To this general action are to be attributed the success of this remedy in certain catarrhal affections, scrofulous engorgements, amenorrhœa, œdema, palsy produced by mercurial or saturnine vapours, and numerous other chronic affections. However, the peculiar influence it exercises upon the diseases of the skin can scarcely be ascribed to its stimulant action on the whole economy: this influence seems to be of a peculiar nature, and it changes, as it were, the mode of vitality of this membrane. It is indeed one of the most capital remedies in the treatment of herpes and psora, and in diseases of the skin generally.

This medicine is administered internally in various doses, according to the effect which we desire to produce. It is frequently employed externally in the form of salves, ointments, &c. in the treatment of the itch. In the state of sulphurous acid, it is used in vapour baths, fumigations, (see page 161,) and combined with hydrogen, in the state of hydro-sulphuric acid, it is the base of sulphurous mineral waters, and sulphurous baths, so frequently and successfully employed in numerous cases.

D. & M. of Adm. *Internally*, as a purgative, ʒj. to ʒiij. in milk or in an electuary.——*Laxative electuary*, Dr. Paris. (Sublimed sulphur, ʒiv.; confection of senna, ℥jss.; syrup of roses, q. s.) Dose cochl. min. one 3 or 4 times a day.——As a *stimulant*, gr. xij. to ℈j. two or three times a day.——*Sulphur lozenges*, P. (Sulphur, 1; sugar, 4; mucilage of gum tragacanth made with rose water, q. s.) Dose from ʒj. to ʒiv.——*Compound sulphur lozenges*, P. (Sulphur, 36; benzoic acid, 3; orris root, 9; essential oil of aniseed, 2; sugar, 792; mucilage, q. s.) Dose from ʒss. to ʒij.——*Oleum sulphuratum*, L., E. (Sulphur, 1 part; olive oil, 8 parts.)—P., B., Den., Pr. (Sulphur, 1 part; olive, flaxseed, or walnut oil, 4.) Dose, gut. x. to xxx. rarely; it is used both internally and externally.——

Balsamum sulphuris anisatum, P. (Sulphur, 1; essential oil of aniseed, 4.)——*Balsamum sulphuris terebinthinatum*, Den. (Sulphur, 1; essential oil of turpentine, 8.) Dose gut. v. to x.

Externally. Vapour baths, fumigations, (see page 162.)——*Sulphuro-saponaceous lotion*, Paris H. (Sulphur and soap, āā. ℥iij.; water, ℥xv.)——*Unguentum sulphuris*, U. S., E., D., Pr. (Sulphur, 1 part; hog's lard, 4 parts.)—L. (Sulphur, ℥iij. hog's lard, ℥viij.)—P. (Sulphur, 15; hydro-chlorate of ammonia and alum, āā. 1; lard, 30.)——*Unguentum sulphuris compositum*, U. S. (Sulphur, ℥j.; ammoniated sub-muriate of mercury and benzoic acid, āā. ℥j.; oil of lemon, f.℥j.; sulphuric acid, ♏lx.; nitrate of potassa, ℥ij.; lard, ℔ss.)—L. (Sulphur, ℔ss.; white hellebore, ℥ij.; nitrate of potassa, ℥j.; soft soap, ℔ss.; lard, ℔jss.) From 1 to 2 ounces in frictions——*Unguentum sulphuratum compositum*, Den., R., B., A. (Sulphur, 2; sulphate of zinc, 1; lard, 12.)—Pol., Pr. (Sulphur and sulphate of zinc, āā. 1; lard, 4.)——*Alkaline sulphur ointment*, P. (Sulphur, 2; sub-carbonate of potassa, 1; lard, 8.)——*Sulphuro-saponaceous salve*, Paris H. (Sulphur and soap, āā. equal parts.)

Sulphuret of Potassa. *Sulphuretum potassæ.* Liver of sulphur. This compound does not exist in nature, and is always the product of art.

P. P. It is solid, hard, brittle, of a vitreous fracture, of a brown colour; its taste is acrid, caustic, and bitter; it is inodorous when dry, and of a very fetid smell when moist.

C. P. Exposed to the air, the sulphuret of potassa attracts its moisture, acquires a pale green colour, and is converted into a sulphate and hydro-sulphate of potassa. It dissolves in water after being decomposed by it in the above manner, and hydro-sulphuric acid gas is disengaged. It is decomposed likewise by acids and by a high temperature. It turns green the syrup of violets.

Prep. It is prepared by melting together in a crucible, equal parts of sulphur and caustic potassa; or else, by boiling for a long time, some sublimed sulphur with a concentrated solution of potassa.

Th. E. This preparation is a very powerful stimulant, which, administered in large doses, acts as a violent poison. In small doses it stimulates all the organs, but it seems to act more especially upon the skin, the lungs, and the circulatory organs. This remedy is employed internally, in cases of chronic and of stubborn hooping coughs, obstinate tetters, chronic rheumatisms, gout, &c. Dr. Pearson asserts that he had obtained good effects in cancerous diseases from its association with cicuta. It has been highly recommended in croup, but it does not seem to deserve all the praises bestowed on it. It is most frequently used externally, and, in fact, experience has proved that it is useful in the treatment of herpetic, psoric, scrofulous, and rheumatic affections.

D. & M. of Adm. *Internally.* Gr. vj. to xviij. in honey, or in pills, combined with soap.——*Sulphuret of potassa pills*, Dr. Paris. (Sulphuret of potassa, gr. xv.; medicinal soap, ℥j.; balsam of Peru, q. s. for 30 pills.) Dose No. iij. every 4 hours.——*Syrup of sulphuret of potassa*, P. (Sulphuret of potassa, 1; hyssop or

fennel water, 16; sugar, 30, every ounce contains about 12 grains of sulphuret.) Dose from ʒij. to ʒj. and even ʒij.

Externally. Sulphurous baths, PARIS H. (Sulphuret of potassa, ʒiv.; water, as much as necessary.)——*Sulphurous and gelatinous baths*, PARIS H. (To the preceding is added joiner's glue, ℔ij. dissolved in boiling water.)——*Anti-psoric lotion*, P. (Sulphuret of potassa, 24; water, 250; sulphuric acid, 1.)——*Dr. Jadelot's anti-psoric liniment*, P. (Sulphuret of potassa, 2; common soap, 10; poppy oil, 20.)——*Salve for scald-head*, PARIS H. (Sulphuret of potassa and Alicant soda, āā. ʒüj.; hog's lard, ʒüj.)

SULPHURET OF SODA, *Sulphuretum sodæ*, possesses the same properties, and its preparation does not differ from that of the preceding. It seems, however, to be less active. It is very little used, although it deserves to be tried.

SULPHURET OF LIME, *Sulphuretum calcis*, is not employed in France, but is frequently exhibited in Germany, instead of sulphuret of potassa. It is exhibited internally in the dose of gr. vj. to xij. It is used also in solution, *Solutio sulphureti calcis*, B. (Sulphuret of lime, 1; boiling water, 16;) in the dose of a small spoonful. Finally, it may be employed with advantage for preparing sulphurous baths on account of the low price of lime. *Liquor hydro-sulphureticus pro balneo*, A. (Sulphuret of lime, 8; tartaric acid, 1; water, 144;) ℔xij. for a bath.

SULPHUROUS MINERAL WATERS.

The mineral waters belonging to this class, and called *sulphurous*, *hepatic*, &c. are very remarkable for their fetid smell, similar to that of rotten eggs, and by their bitter, brackish, and very unpleasant taste. In general they are limpid and unctuous. The springs which furnish them are mostly warm; there are, however, many cold ones. The chemical composition of these waters varies considerably, but they all contain some hydro-sulphuric acid, in a free state, or combined with an alkali. The other substances found in them are sulphates, hydro-chlorates, and carbonates of soda, magnesia, lime, and even, occasionally, free carbonic acid, and a peculiar vegeto-animal matter.

The sulphurous mineral waters act upon the whole economy as excitants. They promote appetite, render the circulation more active, and produce an abundant perspiration, or a considerable discharge of urine. Indeed, their continued employment produces even a febrile motion, which may last for several days. However, as they are indebted for their principal virtues to the presence of hydro-sulphuric acid, we refer the reader, for ampler details, to what we have just said on the *mode of action* of the sulphuret of potassa.

These waters are employed either internally or externally in

a great number of cases. In herpetic eruptions and in many other cutaneous affections, they act very advantageously. They are likewise used with success in chronic catarrhs, when it is necessary to stimulate in a gentle and continued manner the mucous membrane of the bronchiæ and of the pulmonary cells. They are also highly and justly recommended for their efficacy in the treatment of scrofulous affections, and in engorgements of the lymphatic glands. Finally, they are administered in chronic rheumatism, gout, &c.

The principal sulphurous waters in this country, England, and France, are the following:—

[Sulphur Spring, near *Saratoga*. Directly up the Kayadarossaras creek, and near its banks, and two or three miles from Ellis's Spring, is situated a strong-scented sulphur spring, so much so as to enable us to smell its emanation at some distance from it. The water is clear, and is only slightly agitated by the escape of gas. Its taste is unpleasant, partially resembling bilge water. Its temperature is 50° Fahr. This water has been used in various cutaneous diseases, both internally and externally.

Dr. Steel, on analysis, has obtained from a gallon of water of this spring, the following substances: muriate of soda, grs. 23.6; carbonate of soda, 1.4; carbonate of lime, 33.1; carbonate of iron, 1.9; carbonic acid gas, 43.5 cubic inches; sulphuretted hydrogen gas, 11 cubic inches.]

[Sulphur Spring, *Ballston*. Within a few feet of Lowe's Spring is situated this sulphurous fountain, which announces its character or properties to the smell and taste. Its temperature is 52°. This water, like the preceding, is used for bathing, but is sometimes drank, and is supposed to be highly efficacious in cutaneous affections.

According to Dr. Steel's analysis, a gallon of water yields the following substances: muriate of soda, grs. 64; carbonate of soda, 6; carbonate of lime, 30; carbonate of iron, 4; carbonic acid gas, 144 cubic inches; sulphuretted hydrogen gas, 7.]

[Bedford Sulphur Spring. This water, as well as sulphurous fountains generally, exhales a very strong odour of sulphuretted hydrogen gas. Its temperature is 56° Fahr. Dr. Church, by chemical experiments, has ascertained it to contain carbonic acid, sulphuretted hydrogen gas, small quantities of lime, magnesia, and muriate of soda. It contains no iron. See Bedford Mineral Springs.]

[Harrogate Springs, *England*. This village is celebrated

for its mineral springs. At one place there are two chalybeate springs, at the other there are two sulphurous ones, and at a third place there is one both sulphurous and chalybeate. The old sulphur well, is the only one now, the waters of which are drunk.

According to Dr. Scudamore and Mr. Garden's analysis, one gallon of this water contains muriate of soda, 760 grs.; muriate of lime, 32; muriate of magnesia, 28; sulphate of lime, 8; carbonate of lime, 12; carbonate of magnesia, 8; loss, 5; sulphuretted hydrogen, 13.716 cubic inches; carbonic acid, 9.529; nitrogen and carbonated hydrogen, 5.800.

It is affirmed that this water deserves the particular attention of the American physicians, on account of the resemblance in composition and general properties, between it and the White sulphur Spring, in Virginia. We have not been able to obtain one single analysis of the numerous springs of Virginia. The want of good analyses is particularly felt for the valuable and much esteemed mineral waters of that state.]

[Moffat. The most celebrated sulphurous springs in England are those of Moffat, a village situated about 56 miles from Edinburgh. According to Dr. Garnett's analysis, one gallon of this water contains, muriate of soda, 36 grs.; carbonic acid gas, 5 cubic inches; nitrogen, 4; and hydro-sulphuric acid, 10; making in all 19 cubic inches of gas.]

Aix-la-Chapelle, a Prussian city, near Liege. There are three principal springs, which are distributed into different establishments, the most conspicuous of which are the *Emperor's bath* and the *Herrenbad.* The waters of the Emperor's bath are of a temperature of about 58° Centig. (134° of Fahr.) and they contain in 1000 grammes, hydro-chlorate of soda, 2.96; carbonate of soda, 0.54; sulphate of soda, 0.26; carbonate of lime, 0.13; silica, 0.07; besides 20 cubic inches of hydro-sulphuric acid, 28 of carbonic acid, and 51 of nitrogen.

Artificial Aix-la-Chapelle water, P. Simple hydro-sulphurous water, that is, water containing about its own volume of hydro-sulphuric acid gas, 130; hydro-chlorate of soda, 0.15; sulphate of magnesia, 0.05.

D. & M. of Adm. As a drink, from two tumblerfuls to one quart a day, above this dose they become purgative. Lotions, bath, and shower-bath.

Aix, a small town of Savoy, near Chambery, contains two principal springs, the one called *Sulphur spring*, and the other *Alum spring.* The temperature of the former, taken in the reservoirs called *Bouillons*, is 45° Centig. (113° of Fahr.;) they contain, according to Mr. Socquet, in 112 lbs. sulphur united

with hydrogen, 8.4; free carbonic acid, 22; extractive containing animal matter, 2; sulphate of soda, 33; sulphate of magnesia, 29; sulphate of lime, 72; hydro-chlorate of soda, 9; hydro-chlorate of magnesia, 31; hydro-chlorate of lime, 108; and carbonate of magnesia, 59. The waters of the latter contain less hydro-sulphuric acid, and a larger proportion of free carbonic acid; however, they contain the same principles as those of the sulphur spring, but in slightly different proportions. According to Mr. Cantù they contain besides an alkaline hydriodate.

D. & M. of Adm. As a drink, from 1 to 4 pounds, alone, or which is preferable, edulcorated with milk. In bath, shower and vapour-baths, in lotions, &c.

Bagneres de Luchon, a small town of the department of the *Haute Garonne*, near the frontiers of Spain, there are found numerous springs, the temperature of which varies from 30° to 60° Centig. (84° to 144° Fahr.) The waters of the spring called *La Reine*, contain, according to Mr. Pommier, in 20 kilogrammes, hydro-sulphuric acid 18 cubic inches; carbonic acid gas, 9 cubic inches; hydro-chlorate of magnesia grs. 11; hydro-chlorate of soda, 8; sulphate of magnesia, 10; sulphate of lime, 23; carbonate of lime, 11; sulphur, 6; silica, 4; and vegeto-animal matter, 5.

D. & M. of Adm. As a drink, from 2 to 6 tumblerfuls every morning, either pure or edulcorated with milk. In common and shower baths, in lotion. The mud of these springs is likewise employed.

Bareges, a country town in the neighbourhood of Tarbes, department of the higher Pyrenees, offers three principal springs, which, agreeably to the temperature of their waters, have received the names of *warm*, *temperate*, and *lukewarm*. Their temperature is from 30° to 45° Centig. (84° to 113° Fahr.) According to Mr. Longchamp's analysis they contain caustic soda, hydro-sulphate of soda, a little sub-carbonate of lime and magnesia, silica, nitrogen, and a very small proportion of a peculiar matter of an animal nature, which he calls *Barègine*. These waters are decomposed very easily, and can hardly suffer transportation.

Artificial Barège water, P. Saturated hydro-sulphurous water, 130; pure water, 520; carbonate of soda, 0.8; hydro-chlorate of soda, 0.025.

D. & M. of Adm. These waters are frequently employed in common and shower baths, lotions, &c. and they are commonly prescribed, at the same time, as a drink, in the dose of from 3 to 4 tumblerfuls during the course of the day.

Bonnes, small village of the department of the lower Pyrenees, several leagues distant from Pau, possesses three springs

called the *old*, the *new*, and *Ortech* springs, the temperature of which varies betwixt 30° and 35° Centig. (84° and 91° Fahr.) The water of the old spring contains, according to Mr. Pommier, in 20 litres, besides hydro-sulphuric and carbonic acids, and nitrogen; hydro-chlorate of magnesia, gr. 19; hydro-chlorate of soda, 27; sulphate of magnesia, 78; sulphate of lime, 129; carbonate of lime, 41; sulphur, 4; silica, 4; and loss, 5. Mr. Longchamp thinks that they contain likewise a very small quantity of *Barègine*. Bonnes waters decompose with less facility than those of *Barèges*.

Artificial Bonnes water, P. Pure water, 520; hydro-sulphurous water, 130; hydro-chlorate of soda, 0.15; sulphate of magnesia, 0.05.

D. & M. of Adm. As a drink, from ℔j. to ℔vj. a day; and also in common and shower baths, in lotions, &c.

Cauterets, a country town, near Barèges, department of the higher Pyrenees. There are about twelve springs in this place, the temperature of which varies from 30° to 51° Centig. (84° to 124° Fahr.) The two most celebrated springs are those of *Raillère* and *Mahourat*. The latter is most frequently used as a drink. The temperature of the waters of the former is 40° Centig. (104° Fahr.) and they contain, agreeably to Mr. Pommier's analysis, in 20 kilogrammes, hydro-sulphuric acid, 8 cubic inches; carbonic acid, 4; hydro-chlorate of magnesia, gr. 8; hydro-chlorate of soda, 8; sulphate of magnesia, 18; sulphate of lime, 34; carbonate of lime, 10; sulphur, 4; silica, 4. Those of Mahourat contain some hydro-sulphuric acid, salts with base of soda, and *Barègine* or a gelatinous substance.

Artificial Cauterets water. Water, ℥xx; hydro-sulphuric acid, one-third of the volume; carbonate of soda, gr. ij; hydro-chlorate of soda, gr. j.

D. & M. of Adm. As a drink, from 2 or 3 tumblers to a litre, pure, or mixed with milk. In lotions and baths.

Saint-sauveur, a borough near Luz, department of the higher Pyrenees, has several inconsiderable springs, the principal of which is situated on a mountain. Its temperature is 35° Centig. (95° of Fahr.) and its water contain, according to Mr. Pommier, in a kilogramme, hydro-sulphuric acid gas, 7 cubic inches; carbonic acid gas, 4½ cubic inches; hydro-chlorate of magnesia, gr. 8; hydro-chlorate of soda, 9; sulphate of magnesia, 22; sulphate of lime, 38; carbonate of lime, 9; sulphur, 31; and silica, 2.

D. & M. of Adm. As a drink, 3 to 4 tumblers a day. In baths, &c. They are milder than Barèges' waters, and more suitable to certain individuals.

Enghien, a village recently built, near Montmorency, department of Seine and Oise, possesses two springs, that of the *Fishery* and the *Stinking run*. Their temperature is constantly 15° Centig. (59° Fahr.) In the waters of the first, Mr. Longchamp has found on analysis, in a kilogramme, water, 998.943; nitrogen, 0.008; hydro-sulphuric acid, 0.016; carbonic acid, 0.067; sulphate of lime, 0.121; sulphate of magnesia, 0.041; sulphate of potassa, 0.022; hydro-chlorate of magnesia, 0.010; hydro-chlorate of potassa, 0.042; hydro-sulphate of lime, 0.068; hydro-sulphate of potassa, 0.042; carbonate of lime, 0.506; carbonate of magnesia, 0.052; silica, 0.052; alumina, 0.004; and, finally, traces of organic matter. The water of the Stinking run seems to contain less hydro-sulphuric acid.

D. & M of Adm. As a drink, from 2 to 6 tumblers a day. In common and shower baths, lotions, &c. The temperature of these waters must be raised in order to use them in this manner.

There are many other natural sulphurous waters; but as they are not so much in use as those we have just described, we shall confine ourselves to mentioning the names simply of the principal ones, viz. those of Saint Amand, Nord, the mud of which is very celebrated for the cure of old wounds, of pains, &c.; of Baden, Swabia, the temperature of which varies from 45° to 65° Centig. (113° to 149° Fahr.) and which are highly estimated throughout Germany; of Ax, Arriége; of Evaux, Creuse, its temperature being from 46° to 58° Centig. (115° to 137° Fahr.) of Saint-gervais, in Savoy, temperature of from 40° to 45° Centig. (from 104° to 113° Fahr.;) of Greoulx, lower Pyrenees, which are slightly sulphurous, and mark 33° to 45° Centig. (91° to 113° Fahr.;) of Olette, eastern Pyrenees, remarkable for the high temperature of its waters, produces a rise in the Centig. thermometer as high as 80°, (176° of Fahr.;) of Loeche, Switzerland, being of a temperature of from 46° to 52° Centig. (115° to 125° Fahr.;) of Wisbaden, Germany, the temperature of which is 68° Centig. (154° Fahr.) &c. &c.

Besides the artificial sulphurous waters we have indicated, we find in the French Codex the following:—

The *Simple hydro-sulphurous water*, P. Water saturated with hydro-sulphuric acid gas.

The *Acidulous*, or *Naples hydro-sulphurous water*, P. Water containing four times its volume of carbonic acid gas, 492; hydro-sulphurous water, 164; carbonate of soda, 0.9; carbonate of magnesia, 0.5.

Hydro-sulphurous water for bath, P. Solution of sulphuret of soda, marking 25° of Baumé's areometer, 5; gelatinous saline solution, 2; water, q. s. The *Gelatinous solution* is prepared

in the following manner; distilled water, 500; carbonate of soda, and gelatine, āā. 32; sulphate and hydro-chlorate of soda, āā. 16; naptha, 1.

Vegetable Substances.

Guaiacum. *Guaiacum officinale*, Lin. A tree, native of the West Indies. P. U. the wood and resin.

B. C. Trunk elevated; leaves opposite, pari-pinnate, composed of two or three pairs of sessile and oval folioles about one inch long; flowers blue, eight or ten in the axilla of the leaves; calix, five deep divisions; corolla stellate, five petals; ten stamina; ovary pedicellate, surmounted by a simple style; fruit, a capsule, commonly flattened, cordiform, with two and sometimes five cells.

Guaiacum Wood. *Lignum guaiaci*, seu *Lignum sanctum*. P. P. This wood is found in commerce in large irregular pieces or logs, the exterior of which is frequently furnished with a thick, grayish and resinous bark. The part properly called wood is very compact, hard, heavier than water, and of a greenish-brown, whilst the alburnum, or inner bark, is of a light yellow colour, and of a much softer nature. The taste of guaiacum is very acrid and slightly bitter, and it has hardly any smell. For medical uses this wood is reduced to a coarse powder by means of a rasp, *Rasura ligni guaiaci*. This powder, yellow at first, becomes green by exposure to light, and provokes sneezing, although it is almost inodorous.

C. P. Guaiacum wood contains a large quantity of a peculiar resin, which we shall soon examine, and a small quantity of essential oil, possessing the smell of vanilla. Water dissolves its active principles only after a long ebullition, they are, on the contrary, very soluble in alcohol and ether.

Th. E. See resin of guaiacum.

D. & M. of Adm. *Decoction*, ℥ss. to ℥ij. to Oiij. of water, reduced one-half. ——*Decoctum guaiaci*, formerly *Decoction of the woods*, U. S., E. (Guaiacum wood, ℥iij.; raisins, ℥ij.; sassafras, liquorice, āā. ℥j.; water, Ox.; reduce to one-half.)—P. (Guaiacum and sarsaparilla, āā. 6; sassafras, 1; liquorice, 2; water, 250.)—New York H. (Guaiacum, ℥ij.; sarsaparilla, sassafras, liquorice root, āā. ℥j.; mezereon bark, ℥vj.; water, Ovj.; boil down to Oiv.)——*Thea amara*, Den. (Guaiacum, juniper berries, senna, and water trefoil, āā. equal parts.)——*Decoctum lignorum*, B., F. (Guaiacum 10; burdock, and soap-wort, āā. 6; sassafras and liquorice, āā. 3; water 576.)——*Extractum ligni guaiaci*, A., Pr., Pol., Den. ℥ss. to ℥j.——*Tinctura ligni guaiaci*, P., Pr. from ℥ss. to ℥j.

Resin of Guaiacum. *Resina guaiaci*. A peculiar juice, exuding from the bark of the tree just described, and which Mr. Brande considers as a proximate principle, *sui generis*, which he calls *guaiacin*.

P. P. This substance is in irregular masses, brittle, with a shining fracture, of a greenish-brown colour, of an agreeable smell,

similar to that of benzoin; its taste is weak at first, then acrid, and producing a considerable irritation of the throat. Its specific gravity is 1.2289; reduced to powder it is grayish at first, but it soon becomes green wherever it is in contact with the air and light.

C. P. The resin of guaiacum, according to Brande, contains 798 of pure resin, and 202 of bark. Water dissolves only 9 per cent.; whilst alcohol takes up about 95 of that substance. The alcoholic solution is of a deep brown colour, which soon changes to blue or green, by the action of nitric acid or starch. It is very soluble in alkalies and in their carbonates.

Incomp. Subst. Mineral acids.

Th. E. The wood and resin of guaiacum act upon the economy like stimulants; but they appear to exercise a more special influence upon the skin, the secretion of which they increase in a remarkable manner. In consequence of this mode of action, these substances are employed in gout, chronic rheumatism, and affections of the skin, in old and obstinate venereal diseases, scrofulous affections, &c. When guaiacum was first introduced into the materia medica, it was thought to be capable of curing syphilitic diseases, without the assistance of other remedies; now it is considered only as a powerful auxiliary of mercury in cases of this nature. The wood is commonly used under these circumstances. The resin is administered in preference in rheumatism, gout, &c. In large doses this resin becomes purgative.

D. & M. of Adm. Gr. x. to ℈j. in pills, or suspended in an emulsion, by means of the yolk of an egg.——*Bolus guaiaci comp.* Guy's H. (Resin of guaiacum, ʒij.; ipecacuanha and opium, gr. vj.; conserve of roses, q. s.) For 6 bol. No. j., ij., or iij. a day.——*Mistura guaiaci*, L. (Resin of guaiacum, ʒjss.; sugar and mucilage of gum arabic, āā. ʒij.; cinnamon water, f.ʒviij.) Dose ʒj. to ʒij. 2 or 3 times a day.——*Mistura guaiaci ammoniata*, Guy's H. (Resin of guaiacum, ʒij.; liquor of sub-carbonate of ammonia, ʒijss.; barley water, ʒviij.) Dose from ʒss. to ʒj. 2 or 3 times a day.——*Tinctura guaiaci*, U. S. (Resin of guaiacum, ℔j.; alcohol, Oijss.)—L. (Resin of guaiacum, ℔ss.; proof spirit, Oij.)—D. (Resin of guaiacum, ʒiv.; proof spirit. Oij.)—E. (Resin of guaiacum, ʒvj.; alcohol, ℔ijss.)——*Tinctura guaiaci ammoniata*, U. S., L., E., D., Pr., Pol., Den., F. (Resin of guaiacum, ʒiv.; ammoniated alcohol, Ojss.) Dose from ʒj. to ʒij.——*Sapo guaiacinus*, Pr., Pol. (Saturated solution of caustic soda and water, āā. equal parts; resin of guaiacum, as much as may be dissolved.) Dose from gr. vj. to xii. in pills.

Family Asparagineæ.

Sarsaparilla. *Sarsaparillæ radix. Smilax sarsaparilla*, Lin. A sarmentose shrub, growing spontaneously in Peru, Mexico, and all over South America. P. U. The root.

B. C. Stem articulate, branchy, furnished with recurved thorns; leaves alternate, tough, cordiform, furnished with two tendrils at their base; flowers greenish, dioicous, in small simple umbels upon a common pedicle; calix six-divided; male flowers, 6 stamina; female flowers, one ovary with three monospermous cells; three stigmas; fruit, a round berry of a reddish colour, containing three seeds.

P. P. Root fibrous, several feet long, of the size of a quill, bark wrinkled, gray or reddish externally, white or of a slightly pink colour internally, inodorous, of a mucilaginous and bitterish taste.

C. P. According to Pallota, this root contains some *Parillin*, fecula, mucilage, and albumen; boiling water and alcohol take up its active principles.

Parillin. *Parigliwm.* A peculiar proximate principle, discovered by Pallota. It is white, pulverulent, heavier than distilled water, of a bitterish and slightly astringent taste, and of a peculiar odour. It is slightly soluble in warm water and cold alcohol, but this menstruum when boiling dissolves it completely. It reddens slightly the curcuma, is decomposed by concentrated acids, and by heat, and forms neutral salts with diluted acids. According to experiments performed by Pallota upon himself, we are inclined to believe that this substance is the active part of sarsaparilla. It has not as yet been employed as a remedy; but it might prove very important, by giving it a fair trial.

Incomp Subst. Infusion of galls, lime water, nitrate of mercury, and acetate of lead.

Th. E. Sarsaparilla has been considered as essentially diaphoretic and diuretic, and nevertheless its action is very weak in this respect. It is not easy to indicate the *modus operandi* of this substance. The only positive knowledge we have respecting it is, that Parillin, in the dose of a few grains, diminishes the frequency of the pulse, produces nausea, syncope, a general state of weakness, &c. This root is frequently employed, either alone, or in connection with other substances, called sudorific, in the treatment of secondary syphilitic symptoms, in chronic rheumatisms, and certain diseases of the skin. It seems to be useful in arresting the ulcerations of the larynx and pharynx, proceeding from venereal diseases, or from the abuse of mercurial preparations, and we have completely succeeded in a case of this kind, which had eluded every other mode of treatment.

D. & M. *et* Adm. Powder, ʒss. to ʒj. Decoction, ℥ij. to ℥iv. to Oj. of water, reduced to Oj. ——*Decoctum sarsaparillæ*, U. S., E. (Sarsaparilla, ℥vj.; water, Cj.)—L. (Sarsaparilla, ℥iv.; water, Ovj.)—D. (Sarsaparilla, ʒjss.; water, Oij.) Boil down to one-half. ——*Decoctum sarsaparillæ compositum, Lisbon diet drink*, U. S., D. (Sarsaparilla, ʒjss.; guaiacum, sassafras, liquorice, āā. ʒij.; mezereon, ʒij.; boiling water, Oiij.) Boiled down to one-half.—L. Boiling decoction of sarsaparilla, Ovj.; sassafras, guaiacum, liquorice root, āā. ʒij.; mezereon bark, ʒss.) Boil for a quarter of an hour. ——*Decoctum sub-acetatum plumbi cum sarsaparilla*, E. (Sarsaparilla, red and yellow sanders, āā. ʒi. rose wood, guaiacum, sassafras, āā. ʒij. sulphuret of antimony, ʒi. mezereon bark and liquorice, āā. ʒj. water, ℥xl.)—— *Decoction Pallini*, E. (Sarsaparilla, China root, pumice stone, and sulphuret of antimony, āā. ʒj. green rind of European walnut, ℥ij. water, ℥c.) Dose a table-spoonful every hour. ——*Pallot's drink*, Pars H. (Sarsaparilla,

℥iij.; isinglass, ℥ss.; crude antimony, ʒiv.; water, ℔iv.)——*Decoctum sarsaparillæ cum mezereo*, B. (Sarsaparilla, 12; mezereon bark, 1; liquorice, 6; water, 384.) Dose from ℥vj. to ℔j. a day.——*Decoctum Zittmanni fortius*, B. (Sarsaparilla, 96; sugar of alum,* 12; proto-chloride of mercury, 4; artificial cinnabar, 1; aniseed and fennel, āā. 4; senna, 24; liquorice, 12; water, 2304; boil down to one-third.) Dose, one pound morning and evening.——*Decoctum Zittmanni mitius.* (To the residue of the preceding decoction, add sarsaparilla, 48; lemon peel, cinnamon, cardamom, and liquorice, āā. 3; water, 2304; prepare in the same way.) Dose, one pound at noon.——*Extractum*, L. &c. gr. xij. to ʒj.——*Syrupus sarsaparillæ*, P. (Sarsaparilla, simple syrup, and honey, āā. 1 part; water, 20 parts.) Dose from ℥j. to ℥ij——*Syrupus sarsaparillæ compositus, Cuisinier's syrup*, P. (Sarsaparilla, honey, and sugar, āā, ℔xvj.; borrage flowers, pale roses, senna, and aniseed, āā. 1.)—U. S. (Sarsaparilla, honey, and sugar, āā. ℔ij.; liquorice, roses, senna, and aniseed, āā. ℥ij.; water, Oxii.)——*Syrupus sarsaparillæ and guaiaci*, U. S. (Sarsaparilla and guaiacum, āā. ℔j.; roses, gum Arabic, and senna, āā. ℥j.; ginger, ℥ss.; water, Ox.)——*Dr. Savaresi's Laffecteur's anti-syphilitic rob.* (Sarsaparilla, 36; guaicum, China root, and sassafras, āā. 24; Calisaya bark, 12; borrage flowers, 6; aniseed, 1; water, as much as necessary; clarified molasses, 120.) Dose from ℥ss. to ℥j.

China Root. *Radix chinæ. Smilax china*, Lin. A sarmentose shrub, very nearly related to the preceding, and growing in China and in South America. P. U. The root.

P. P. This root is about the size of the first, lignous, heavy, knotty, hard, compact, of a deep brown colour internally, covered with a smooth, reddish-brown bark, inodorous, and of a viscous and slightly harsh taste.

C. P. It contains a good deal of fecula, some gum, and a red colouring principle, soluble in water; this menstruum dissolves the small quantity of active principles it contains.

Th. E. Its employment is the same as that of sarsaparilla, with which it is generally associated. It is, however, a very weak and doubtful remedy.

D. &. M. of Adm. *Decoction*, ℥ij. to ℥iij. to ℔ij. of water.

Family Laurineæ.

Sassafras. *Radix and Cortex sassafras. Laurus sassafras*, Lin. A tree, native of North America. P. U. The wood and bark of the root.

B. C. Trunk from thirty to forty feet high; leaves alternate, caducous, of various shapes, green on the upper surface, whitish underneath; flowers dioicous, yellowish, in small panicles; male flowers, calix pubescent, six-parted, nine stamina, three of which are barren; anthers quadrilateral, four-celled; pistil barren; female flowers, five barren stamina; stigma globular; ovary ovoid; fruit, a pisiform drupe.

P. P. This root is found in commerce in pieces of the size of the arm; the lignous part is light, porous, composed of concen-

* This is nothing more than some powdered alum, triturated with rose water and albumen, and formed in the shape of small pyramids.

tric layers, of a yellowish colour, of a strong and aromatic smell, of a sweetish taste at first, then warm and slightly acrid. The bark is thick, rugose, of a spongy nature, of a red brown colour, and furnished with a resinous and yellowish epidermis. Its smell and taste are much stronger than those of the wood.

C. P. This substance contains an essential oil, heavier than water, very volatile, of a pale yellow colour, becoming red by the action of light. Water and alcohol principally take up its active principles.

Th. E. It is an energetic stimulant, employed, generally, as a sudorific, in similar cases to those in which guaiacum is used: it is often associated with the latter.

D. & M. of Adm. *Powder*, seldom, ʒss. to ʒj. *Infusion*, ʒj. to ʒij. to ℔ij. of boiling water.——*Distilled water*, P. ʒj. to ʒij.——*Essential oil*, gut. ij. to gut. x.——*Aqua calcis comp.*, M. (Sassafras, 16; liquorice, 8; pulverized nutmeg, 3; lime water, 48.) Dose, ʒij. to ʒiv.

Family Solaneæ.

Bitter sweet. *Dulcamaræ caules. Solanum dulcamara*, Lin. An under-shrub, native of Europe, and naturalized in this country; flowering in June and July. P. U. The stems.

B. C. Stems sarmentose, lignous at their base, herbaceous in the rest of their length, several feet long; leaves alternate, tri-lobed; flowers violet, pedunculate and in clusters; calix persistent, very small; corolla with narrow lobes, marked at their base with two small green dots; stamina partly united in a cone; fruit, an ovoid, red berry.

P. P. The woody part, cut in small pieces and split in two, is only employed. This plant possesses a strong and virous smell, which becomes weaker on dessication, and a bitter taste, leaving after it a sweetish taste.

C. P. Bitter-sweet contains an alkaloid substance, discovered by Desfosses, and called by him *Solania*, combined with a peculiar acid, discovered and denominated *solanic acid* by Peschier; and several salts with base of lime and potassa. Water dissolves its active principles.

Th. E. Dulcamara irritates the digestive canal, and when it has been absorbed, it seems principally to act upon the cutaneous system. In fact, it promotes perspiration, causes an itching and pricking of the skin. It acts likewise on the nervous system; for, its employment is occasionally followed by slight convulsive motions, heaviness of the head, &c. However, the narcotic influence attributed to it appears to be rather suppositious than real, or at least it is very weak. The employment of this substance has been recommended as a sudorific in rheumatic and venereal affections, in itch and several other diseases of the skin; but it is now much less used than it was formerly.

D. & M. of Adm. Powder, ʒss. to ʒj. Decoction and infusion, ʒss. to ʒj. to ℔ij. of water.——*Extractum dulcamaræ*, Pol., Pr., A., ℈j. to ʒj.

Garden Nightshade. *Solanum nigrum*, Lin. An annual plant, native of Europe, naturalized in this country, and nearly related to the preceding. Its flowers are white, and the berries black, when in the state of maturity; it contains, as the bitter-sweet, some *Solania* united with malic acid. Its action upon the economy is very slight; indeed, its leaves when boiled are made use of in some countries as an aliment: it is moreover of the same nature as that of the bitter-sweet, with which it may be associated. It is principally used as emollient and sedative poultices in cases of whitlow, of phlegmons, and painful cutaneous eruptions.

Solania. An alkaloid proximate principle, discovered by Mr. Desfosses in the bitter-sweet, and several other plants of the genus *Solanum*. Since, Mr. Peschier has ascertained that this substance was in combination with a peculiar acid, which he has called *Solanic acid.*

P. P. *Solania* is pulverulent, white, opaque, pearl-like, inodorous, of a nauseous and bitter taste.

C. P. It is unalterable in the air, insoluble in cold water, soluble in 8000 of this menstruum when boiling, and in a very small quantity in alcohol. Its alkaline properties are very weak; it restores to their blue colour the solutions of litmus reddened by an acid. It combines easily with an acid, and forms with them perfectly neutral and uncrystallizable salts. Heated, it decomposes without melting or evaporating.

Th. E. According to Dr. Magendie's experiments, solania produces at first violent vomiting, then somnolency, and drowsiness; which proves that it acts on the encephalon. It has not as yet been employed as a remedy. It might, perhaps, be administered in the state of an acetate, in the same cases in which bitter-sweet is indicated, in the dose of one-eighth to one-fourth of a grain in pills.

Family Apocyneæ.

[Pleurisy-root. Flux-root, &c. *Asclepias tuberosa*, Lin. *A. decumbens*, Var. A perennial plant, growing all over the United States, in gravelly and hilly grounds, and along streams. P. U. The root.

B. C. Many stems, either erect, ascending or procumbent, round and hairy; leaves scattered, sessile, or on short petioles, entire, oblong, lanceolate; flowers in terminal or lateral corymbose umbels, of a bright orange colour; calix small, reflected, five-parted; fruit, 2 oblong follicles, often abortive; seeds flat, ovate, furnished with a silky appendage.

P. P. Root large, irregular, tuberous, white internally, brown

externally. When dried, it is brittle and easily pulverized. Taste slightly bitter, but not unpleasant. The fresh root, as well as the whole plant, is lactescent and nauseous.

C. P. No accurate analysis has as yet been made.

Th. E. This very popular medicine has been long used in the southern states. It seems to act powerfully on the cutaneous system, inducing a general and plentiful perspiration without heating the body. In the form of decoction it often produces diaphoresis when other medicines have failed to produce this effect. The powder frequently occasions alvine evacuations; but it is particularly valuable as an expectorant, a diaphoretic, and a febrifuge; and, in this respect, its efficacy is amply confirmed by the testimony of Dr. B. Parker, of Bradford, Massachusetts, who, from his own observation during an extensive practice of twenty-five years, has conceived a very favourable opinion of its power. In pneumonic fevers, recent colds, catarrhs, diseases of the chest in general, this medicine has, in his hands, proved equally efficacious. He directs it to be taken in the form of strong infusion, in the dose of a tea-cupful every two or three hours. Dr. Chapman speaks of the properties of this asclepias in very favourable terms; and Dr. Eberle says he has frequently exhibited it with manifest advantage in catarrhal affections, pneumonia, phthisis pulmonalis, and in acute rheumatism. The asclepias has also been employed by practitioners in some parts of the United States as a gentle cathartic in dentition; and by many families in the country this root has long been esteemed and resorted to for the relief of pains of the stomach from flatulence and indigestion; hence the vulgar name of wind-root, by which it is known in different sections of the union.

D. & M. of Adm. Powder, as tonic and diaphoretic, from 20 to 40 grains. Decoction, (Pleurisy-root, ℥j. to 1 quart of water.) Dose, 1 tea-cupful every 2 or 3 hours. In dentition, (℥ij. of the root boiled in ℥xviij. of milk down to ℥xij.) Dose, ℥i. of the decoction to be given 2 or 3 times in the course of the day. It excites a copious perspiration, and proves at the same time a gentle cathartic.]

[The Common Silk-weed, *Asclepias syriaca*, Lin. and Flesh-coloured Silk-weed, *Asclepias incarnata*, Lin. seems to possess the same properties as the preceding species. They have been used with success in the same doses, and in the same manner, in asthma, typhus fever, &c.; they render expectoration more copious, the matter thicker, and more digested. They act also as an anodyne, relieving pains, dyspnœa, and cough.]

The root of the Swallow-wort or Tame-poison, *Asclepias vincetoxicum*, Lin. a European plant, is white, of a strong odour, and acrid taste, when green. It loses some of its proper-

ties by desiccation. It contains, according to Mr. Feneulle, a matter producing vomiting, but differing from emetin; a resin, mucilage, some fecula, a fatty oil, a volatile oil, lignous fibres, and malates of potassa and lime. This substance, once so much praised as an *Alexipharmic*, irritates powerfully the stomach and intestines, and frequently produces vomiting and alvine evacuations. In small doses it seems to act as a diaphoretic, but it is now almost out of use. It is administered in the dose of ℥ss. to ℥j. to ℔ij. of water. It enters into the composition of several officinal preparations.

Family Gramineæ.

Provence Reed. *Radix donacis. Arundo donax*, Lin. A perennial plant, growing in the south of France. P. U. The root.

B. C. Culm lignous, from eight to ten feet high; leaves long, rough, two feet long; flowers in very large, ramose, and terminal panicles, the spikelets solitary; exterior calix, tri-flore, with two awns; glume surrounded by persistent bristles; three stamina.

P. P. This root is met with in commerce in slices or pieces of different sizes. It is spongy, and, nevertheless, it is hard internally, of a yellowish colour, furnished with a yellow and shining epidermis, marked with a great number of circular lines, of a sweet taste, and inodorous.

C. P. It contains, according to Mr. Chevallier, a mucous matter slightly bitter, a resinous matter similar to that of Vanilla, an essential oil, a substance containing nitrogen, sugar and salts of potassa and lime. Water takes up its active principles.

Th. E. This root is a remedy of little activity, to which are however attributed, some diaphoretic and diuretic virtues. It is a popular remedy daily employed in superabundance of milk after child-bed; females of the lower classes of society consider it as an extraordinary remedy in such cases.

D. & M. of Adm. Decoction, ℥ss. to ℥ij. to ℔ij. of water reduced to one half.

Broom-reed, *Arundo phragmites*, Lin. possesses the same properties as the preceding, and is frequently used in its stead. It is supposed to be one of the ingredients of the *Rob de Laffecteur*, so highly spoken of as a specific in constitutional syphilis.

Family Terebinthaceæ.

[Poison Oak. *Rhus toxicodendron*, and *Rhus radicans*, Lin. A native shrub, which grows wild in the woods and in old fields of this country. P. U. The leaves.

B. C. Stem of a moderate growth, climbing; leaves alternate, ternate, folioles pedicellate, oval, green, smooth above, and generally pubescent beneath; flowers dioicous, axillary, in sessile racemes; fruit, small berries or dry drupes, yellowish-white, containing a globular and striated seed.

P. P. Poison oak possesses the singular property of exciting, when touched, and even by the simple exposure to the emanations emitted by it, a violent irritation of the skin, which is soon covered with red spots, and sometimes even with pimples. The whole plant, and especially the leaves, contain a resinous and extremely acrid milky juice.

C. P. Mr. Van Mons, of Brussels, asserts that the poisonous exhalation of this shrub is a carburetted hydrogen gas, and that it contains also a considerable quantity of tannin, some gallic acid, a small portion of green fecula, and a still smaller quantity of gum and resin.

Th. E. According to Orfila's experiments, this substance acts upon the economy like the narcotico-acrid poisons. In small doses it proves a very energetic stimulant, and seems also to exercise a considerable influence on the skin. Dr. Dufresnoy has exhibited it very successfully in obstinate tetter, and it has been used, in England principally, in chronic rheumatism, palsy, epilepsy, &c. However, this is a dangerous remedy, requiring the greatest prudence.

D. & M. of Adm. The powdered leaves, gr. ss. to gr. iv. in pills. The extract, P. prepared with the fresh leaves, is used in the dose of gr. x. to ℈j. per day, and gradually increased to ʒj. and even ʒij.]

Family Campanulaceæ.

[Blue Lobelia, or Blue Cardinal Flower. *Lobelia syphilitica*, Lin. A perennial plant, growing in marshes, meadows, &c. P. U. The root.

B. C. Stem erect, angled, and simple, hirsute above, from one to three feet high; leaves crenulate, denticulate; flowers of a fine blue colour, on short bracteated pedicles, disposed on a long, leafy, terminal and sometimes axillary spike; calix hirsute, with five hastate and hispid segments; filaments of a lead-blue colour; anthers white.

P. P. Lactescent when fresh, of an acrid and persistent taste, resembling that of tobacco, and exciting nausea; the dry leaves are of a yellowish-gray colour marked with circular and longitudinal striæ, of a sweet and afterwards slightly acrid taste, and leaving in the mouth a weak aromatic perfume.

Th. E. This plant acts as a sudorific, when given in small doses, but in large quantities it acts as an emetic, and it often purges. It has enjoyed a reputation in the treatment of venereal diseases, but it is now entirely discarded for this purpose; however, its diuretic properties are fully confirmed, and it seems not unreasonable to conjecture that to this cause this plant owes its reputation as an anti-syphilitic, in consequence of its having proved serviceable in gonorrhœa, which, from all we can learn, is by far the most prevalent form of the venereal disease among our aboriginal Indians. This species of lobelia seems to have been exhibited with advantage in dropsy, by some practitioners of the western country.]

[The Red Cardinal Flower, *Lobelia cardinalis*, Lin. is used by the Cherokee Indians as an anthelmintic.]

The Red Sanders Wood is furnished by the *Pterocarpus santalinus*, Lin, a tree of the *Family Leguminosæ*, which grows in Ceylon; and those of the White and Yellow Sanders, which seem to be produced by two varieties of the *Santalum album*, Lin. of the family *Santalaceæ*, which family has been formed out of the *Onagræ*, were once considered eminently sudorific. They are now almost out of use, except that they enter into a few officinal preparations.

The same may be said of the Rhodium or Rose Wood, which is furnished by a sarmentose shrub of the family *Convolvulaceæ*, *Convolvulus scoparius*, Lin. growing in the Canary Islands.

The roots of the Long and Round Cyprus Grass. *Cyperus longus* and *C. Rotundus*, Lin. and those of the German Sarsaparilla, *Carex arenaria*, Lin. of the family *Cyperaceæ*, were once administered as sudorifics; but they are now obsolete; however, the latter is still used in Germany, as a substitute for sarsaparilla, in the treatment of syphilis.

Finally, the following plants have also been used as possessing inconsiderable diaphoretic properties, viz. The Stemless Milkvetch, *Astragalus exscapus*, Lin. of the family *Leguminosæ;* the Common Field Scabious, *Scabiosa arvensis*, Lin. of the family *Dipsaceæ;* the inner bark of the Common Elm Tree, *Ulmus campestris*, Lin. of the family *Ulmaceæ;* the leaves of the Black Currant, *Ribes nigra*, Lin. of the family *Ribesiæ;* the root of the Spanish Viper Grass, *Scorzonera hispanica*, Lin. of the family *Synantherеæ;* the petals of the Red Pink, *Dianthus caryophyllus*, are used to prepare the *Pink syrup*, P.

which is employed to edulcorate exciting and diaphoretic mixtures and ptisans, &c. &c.

§ III. Remedies acting in a special manner on the Organs of Generation.

We shall not here treat of the long list of the substances which old authors used to rank among *Emmenagogues*, or remedies capable of provoking menstruation; for most of these remedies have no special action upon the womb, but they act on the genital organs as they do on the whole economy, by their general stimulation. The ferruginous preparations, which are very frequently used in order to restore or promote the menstrual discharges, may be taken as an instance of our position.

We are not acquainted with any remedy possessing the peculiar property of promoting the menses, but there is a certain number of them, that, at the same time that they stimulate generally the whole economy, seem to act more particularly and with more energy upon the organs of generation. Cantharides, which we have already mentioned under the head of vesicating substances, are of this number. Those which we shall now investigate seem to irritate the matrix in a special manner. These remedies are not numerous, and are seldom exhibited.

Family Rutaceæ.

Common Rue. *Rutæ folia. Ruta graveolens*, Lin. An under-shrub, native of the south of France. P. U. The whole plant, but principally the leaves.

B. C. Stem ramose, from three to four feet high, glaucous; leaves scattered, compound, glaucous, furnished, like the stem and branches, of a great number of glandular bodies; flowers yellow, in corymbiform panicles, each furnished with a bractea; calix plane, persistent, with four sharp divisions; petals concave, unguiculate; anthers bilocular, ovoid; style central, shorter than the stamina; stigma simple; fruit, a capsule with four or five polyspermous cells.

P. P. This plant has a strong, aromatic, and unpleasant smell, and an acrid, bitter, and warm taste.

C. P. It contains a very abundant volatile oil, of a green colour, when furnished by the green leaves, and yellow when distilled from the dry plant, of a less unpleasant smell than the herb itself, which contains also some sulphur. The active principles are dissolved by water and principally alcohol.

Th. E. It is a very energetic general stimulant, but it seems to exercise at the same time a peculiar influence on the uterus. Indeed, this remedy causes the irritation and even inflammation of this organ, without producing, simultaneously, general stimulant effects so sufficiently marked as to induce us to attribute to

them the local phenomena of which we are speaking. It is exhibited with advantage in cases of amenorrhœa, proceeding from the debility of the uterus, in chlorosis, hysteria, &c. It is used also as a vermifuge.

D. & M. of Adm. Powder, gr. xij. to ℈j. in pills. Infusion, one or two pinches to ℔ij. of boiling water.——*Aqua rutæ*, A., Pr., Pol. Dose, ʒss. to ʒij.——*Extractum rutæ*, E., L. Dose, gr. x. to ℈j.——*Oleum rutæ*, P., Pol., Pr., D., R. Dose, gut. ij. to x.——*Acetum rutæ*, Pr., A. (Rue, 1; vinegar, 8.) Dose, ʒss. to ʒj., in an enema.

Externally, Infusion, in lotions, fumigations, steam baths.

Family Coniferæ.

Savin. *Sabinæ folia et rami. Juniperus sabina*, Lin. A shrub growing in Europe and some parts of North America. P. U. The leaves and branches.

B. C. Stem from ten to fifteen feet high; leaves very small, squamiform, opposite, imbricate upon the stem; flowers dioicous, in aments; fruit, pisiform and blackish berries, containing two small stones.

P. P. This plant possesses a strong turpentine smell, and a very acrid and bitter taste.

C. P. It contains a large quantity of a very odorous and acrid volatile oil. Water and alcohol dissolve its active principles.

Th. E. Savin possesses properties similar to those of rue; it is perhaps still more active. It is employed internally to fulfil similar indications, and externally as an irritant, applied to fungous ulcers. It is a dangerous remedy, and is now seldom used.

D. & M. of Adm. *Internally*, Powder, gr. v. to ℈j., two or three times a day. *Infusion*, seldom, ℈j. to ʒss. to two pounds of boiling water.——*Extractum sabinæ*, D. Dose, gr. x. to ℈j.——*Oleum volatile sabinæ*, E., D., P. Dose, gut. ij. to x. in a mixture.

Externally, Powder, upon atonic and fungous ulcers. *Infusion*, in lotion, bath, fumigations, and poultices.——*Ceratum* seu *Unguentum sabinæ*, U. S. (Savin leaves in powder, one part; resin cerate, six parts.)—L. (Fresh leaves of savin, bruised, ℔j.; yellow wax, ℔ss.; lard, ℔ij.)—D. (Fresh leaves of savin and yellow wax, āā. ℔ss.; lard, ℔ij.) used as an epispastic.

[Red Cedar. *Juniperus Virginiana*, Lin. A native tree of considerable size, growing principally in the southern states. P. U. The leaves.

B. C. Trunk from thirty to forty feet high, very branchy; leaves numerous, small, scaly, and mucronate, ternate, and joined at the base, the younger imbricate, the older loose; flowers very small, both sexes frequently found on the same tree, and in other instances located on two different trees; fruit, small blue berries, one or two-seeded; seeds nuciform.

Th. E. Very similar in appearance, taste, and medical virtues to the savin, by which name it is known throughout the country. It is a general stimulant, and is also an emmenagogue, and rube-

facient. It seems to possess the same properties as savin, and has been long used for the same purposes. The fresh leaves, boiled for a short time in about their weight of lard, with a little wax, form an excellent cerate of peculiar efficacy, as a perpetual epispastic, producing a change in the discharge from a serous to a purulent appearance. Internally the effects of the leaves are very similar to those of savin, as an emmenagogue, a general stimulant, and a diaphoretic, in rheumatism. They have also some reputation as a diuretic in dropsy.—*Dr. Coxe.*]

Family Iridex.

Saffron. *Crocus. Crocus sativus,* Lin. A plant, native of the Levant, and cultivated in Europe. P. U. The stigmas.

B. C. Bulb round, depressed and fleshy; leaves erect, green on the upper surface, white underneath; flowers, one to three, very large, violet with red veins; calix petaloid, with a long and thin tube; stamina situated at the base of the three external divisions of the calix; style trifid; three crenate stigmas; fruit, small, globular, and three-celled capsule.

P. P. This substance is in long filaments, slightly rolled, flexible, elastic, of a very deep orange-red colour, of a sharp and bitter taste, and of a strong peculiar odour. It dyes saliva of a golden yellow.

C. P. Saffron contains an orange-red colouring matter, a very odorous volatile oil, acrid and caustic, a concrete fixed oil, gum, albumen, and salts. The substance which Bouillon Lagrange, and Vogel, have denominated *Polychroite,* is but a compound of colouring matter and volatile oil. Water, alcohol, vinegar, &c. dissolve its active principles.

Th. E. In small doses, saffron is employed as an excitant of the digestive organs; in large doses, it acts upon the whole economy in the same way as stimulants; but it is principally upon the uterus that it seems to exercise its influence. It is employed with success to abate the lumbar pains which precede or accompany menstruation in some females, and it is frequently useful in chlorosis, hysteria, &c. It is likewise employed as stomachic and anti-spasmodic. It enters into the composition of several officinal preparations.

D. & M. of Adm. Powder, gr. xij. to ℈j. Infusion, ʒss. to ʒj. to Ibij. of boiling water.——*Stomachic bolus,* Paris H. (Saffron and cinnamon, āā. gr. xij.; simple syrup, as much as necessary to form two bol.) Dose No. 1, morning and night.——*Confectio aromatica,* L. (Cinnamon and nutmeg, āā. ʒij.; cloves, ʒj.; cardamom, ʒss.; saffron, ʒij.; prepared shells, ʒxvj.; refined sugar, Ibij.; water, Oj.)—D. (Cinnamon and nutmeg, āā. ʒss.; sugar and saffron, āā. ʒj.; cardamom and cloves, āā. ʒij.; precipitated chalk, ʒij.; syrup of orange, a sufficient quantity.) Dose from grs. x. to ʒj.——*Electuarium croci,* P. (Saffron and red sanders, āā. 6; cinnamon, 22; origanum and yellow sanders, āā. 3; myrrh, terra sigillata, and prepared chalk, āā. 64; capillaire syrup and white sugar, āā.

125.)——*Tinctura croci sativi*, E., D. (Saffron, ℥j.; proof spirit, ℥xv. or Oj.)—P. (Saffron, 1; alcohol, 12.) Dose from ℈j. to ℥j.——*Syrupus croci*, P. (Saffron, 1; Malaga wine, 16; sugar, 26.)—L. (Saffron, ℥j.; boiling water, Oj.; sugar, ℔ijss.)—Pol., Pr. (Saffron, 1; French wine, 24; sugar, 18.) Dose from ʒij. to ʒss.

Externally. In lotions, fumigations, &c.

Ergot or Spurred Rye. *Secale calcaratum* seu *cornutum. Clavus secalinus.* A fungiform excrescence which takes place under peculiar circumstances, between the valves of the glume of several cereales, and especially of rye, *Secale cereale*, Lin. De Candolle considers it as a species of parasite fungus, which he calls *Sclerotium clavus;* but Mr. Leveillé thinks with more reason, that it is composed of the unfecunded, altered, and degenerated ovary, and of a species of fungus placed at its summit, and to which he gives the name of *Sphacelia segetum.*

P. P. Ergot is elongated, recurved, cylindrical, swollen in the middle, and generally marked on one of its sides with a longitudinal furrow. It is, moreover, brittle, hard, horny, and of a slight violet colour externally, whitish with a shade of violet internally; of an acrid and rather pungent taste, of a faint unpleasant odour, which is only manifest when it is in considerable quantities.

C. P. The spurred rye contains, according to Mr. Vauquelin, a deep yellow colouring matter, soluble in alcohol, a free acid, which seems to be phosphoric acid, some free ammonia, a very putrefiable matter containing nitrogen. Water and alcohol take up the active principles of this substance.

Th. E. The use of spurred rye, as an aliment, is attended with serious accidents, such as violent convulsions, acute and burning pains in the extremities, gangrene of these parts, and even death. The name of *ergotism* is given to the whole of these phenomena. In small doses, this substance acts in a special manner upon the uterus, the parenchyma of which seems to be powerfully excited. It is consequently exhibited in difficult labour, proceeding from the inertia of this organ, and in hæmorrhages so often fatal, produced by the same cause. It is in the United States that this remedy has been principally used; it has been of late employed in France with great success. This substance is to be administered only when the natural pains have ceased, or when they are too weak to bring on delivery; moreover, it is indispensable that the os tincæ be sufficiently dilated or easily dilatable, before we hazard its exhibition, in order to permit labour to take its natural course.

[Dr. W. P. Dewees, who is one of the warmest advocates for the use of the ergot, when properly and timely exhibited, remarks, in the American Journal of the Medical Sciences, No II. "As regards myself, I have the most firm reliance upon the pow-

ers of the ergot, and the character of its action is so distinctly marked, that a very little observation will enable us to detect it." Again, "When ergot has been administered with success, we find the uterine effort not only more quickly repeated, and more powerfully exerted, but these efforts are accompanied with less suffering than the same apparent exertions of this organ, when not urged by this drug." We cannot forbear extracting also, from the same Journal, the cardinal rules laid down by Dr. D. for the successful employment of *Secale cornutum.*

"1st. It should never be given before the membranes are ruptured, the os uteri dilated, and the external parts disposed to yield.

"2d. It must not be used so long as the natural pains are efficient, and competent to the end.

"3d. But should they flag, from any cause, it may be given; provided the labour be a natural labour according to our acceptation of the term 'natural labour;' that is, when the head, (if well situated,) the breech, the feet, or the knees, present. For, independently of any accident which may complicate the labour, it is sometimes desirable, for the safety of the child, to hasten it when the natural powers are incompetent to this end.

"4th. And if the labour be accompanied by any such accident as flooding, convulsions, syncope, &c. it may sometimes be employed to great advantage, provided rules 1 and 2 are not violated.

"5th. It may be used very often with much advantage in every kind of premature labour; and at full time, when the placenta is not thrown off, and the uterus is found in a state of atony.

"6th. Where flooding takes place after the rupture of the membranes; the os uteri well dilated; the pains feeble, but the child well situated.

"7th. Where the head of the child has been left in the uterus by being separated from its body.

"8th. Where the uterus is painfully distended by coagula."

Dr. D. is decidedly against the use of this article in alarming uterine hæmorrhage before delivery. "I have," he says, "in so many words declared that reasoning is against the use of the ergot in the unavoidable hæmorrhage; I will now endeavour to show this to be the case." He had, however, previously remarked, "that in the unavoidable hæmorrhage an advantage may be derived from the exhibition of the ergot by hastening the labour, though it may for a short time increase the discharge. But, in order that this reasoning may have any value as a practical precept, the cases in which this advantage could be derived should be well defined, &c."]

D. & M. OF ADM. Powder, gr. x. to xxx. suspended in ℥iv. of a proper menstruum. Decoction or infusion, gr. xxx. to lx. in ℔j. of water. A table-spoonful every ten minutes.

Family Labiatæ.

[American Pennyroyal. *Hedeoma pulegioides*, Persoon. *Cunila pulegioides*, Lin. A native herbaceous plant possessing the scent of the *Mentha pulegium*. P. U. The whole plant.

B. C. Stems from six to twelve inches high; leaves opposite, oblong, serrate; flowers smaller than the calix, verticillate, bracteate; the lower lip of the calix bristled, the bristles ciliate.

Th. E. This plant is a popular remedy in amenorrhœa, and may be useful in this affection. As a carminative and a diaphoretic it is well calculated to promote the operation of stimulant medicines we occasionally resort to. It is prescribed in infusion without much regard to quantity.]

[Horsemint. *Monarda punctata*, Lin. An indigenous plant, growing abundantly in almost all the sections of the United States. P. U. The leaves.

B. C. Stem angular, pubescent, from twelve to twenty inches high; leaves lanceolate, smooth, dentated; flowers verticillate, bractes coloured and longer than the whorls; corolla yellow, punctated.

Th. E. This plant is a popular medicine as an emmenagogue. It proves likewise a tonic carminative, and is employed to allay nausea and check vomiting in disorders of the stomach. It is used in infusion as the other plants of the same family.]

§ IV. Stimulant Remedies acting especially on certain Glands and Absorption generally.

The action of the remedies of which we are now going to treat, varies considerably. Thus although they are general stimulants, more or less energetic, some spend principally their influence upon the thyroid gland, and on the glands of the mammæ; others upon the salivary glands, &c. But they possess a property which is common to both, and that is, of rendering more active general absorption; an action which is peculiarly remarkable in engorgements of the lymphatic ganglia, in encysted tumours, and others which are not of an inflammatory nature, and in serous effusions. It is thus that iodine, properly administered, frequently accomplishes in a short time, the disappearance of voluminous and old tumours, which had not yielded to any other kind of treatment.

What renders these remedies of a still greater importance, is the property that a certain number of them possesses, of controlling advantageously venereal diseases, and of removing with more or less promptitude all the unpleasant symptoms attendant on these

affections. It is impossible, in the present state of our knowledge, to explain this mode of action; but whatever its cause may be, it is generally acknowledged, and the substances endowed with these properties are called *anti-syphilitic.*

These substances are generally given as alteratives, that is, in such small doses as not to produce alvine evacuations, or any very appreciable effects, but to induce, by their slow but continued action, the desired alterations, without causing, however, the violent disturbance that their employment in large doses might produce. But it is always necessary to watch their action with the greatest attention, and discontinue their exhibition as soon as any unfavourable symptom is manifested; for their influence continues even sometimes after the discontinuance of the remedy.

All the remedies which possess this mode of action are furnished by the mineral kingdom and are comparatively very few.

Iodine. *Iodium.* A simple body which exists in nature only in a state of combination, and is principally found in certain fuci and mineral waters.

P. P. It is solid, grayish-black, in scales of a metallic lustre, of a smell similar to that of chlorine, but weaker, of an acrid and warm taste, and of a specific gravity of 4.946.

C. P. Iodine forms acid by combining with oxygen and with hydrogen; water dissolves $\frac{1}{7000}$, and acquires a yellow colour with it. Alcohol, and especially ether, dissolve a good deal more; heated, it melts at 107° Centig. (225° Fahr.) and volatilizes at 175° Centig. (349° Fahr.) in vapours of a fine violet colour. It colours the skin and paper yellow. Finally, it produces a handsome blue colour by combining with starch.

Prep. Treat the warm mother waters of kelp with sulphuric acid, and condense in a receiver the violet vapours which are disengaged; then wash the crystallized scales which have formed in a weak solution of potassa.

Th. E. In large doses, iodine is a very energetic irritant poison. In small and continued doses, it exercises a general stimulant influence, which, however, affects more particularly the gastro-intestinal, pulmonary and genital mucous membranes. This effect may be carried to such an extent as to produce an obstinate gastro-interitis, or symptoms of pulmonary phthisis, characterized by a very rapid emaciation. Besides this action, iodine exercises another very remarkable and almost specific one, which is induced in the thyroid gland, mammary glands, &c. Indeed, it is observable that, in persons who have been under the influence of this remedy, these organs are more or less completely in a state

of atrophy, after having been for some time the seat of a very lively inflammatory action.

Dr. Coindet, of Geneva, was the first who demonstrated the utility of this medicine in the treatment of goitre and scrofulous affections. By means of iodine, the resolution of certain engorgements of the lymphatic ganglia, such as scrofulous tumours, old and indolent buboes, &c., has been obtained. Dr. Baron, in his work upon tubercular diseases, asserts that he has exhibited it with success in reducing certain scirrhous tumours of the ovaries and of some other organs, and even in cases of tubercular affections. It is used likewise as a powerful emmenagogue; and, according to the observations of Professor Brera, we can have no doubts of its efficacy in several cases of difficult menstruation. Finally, Dr. Richond has proposed it in the treatment of blennorrhagia, chronic leucorrhœa, and engorgements of the testicle, and asserts that he had derived from its employment the most happy results. However, this remedy must always be exhibited with the greatest caution, and its use be immediately discontinued as soon as emaciation begins to occur, which is generally the first indication of its noxious action on the economy, and which action seems to continue for a considerable time after its use has been abandoned.

Externally, it is exhibited with advantage in the same cases.

D. & M. of Adm. *Internally*, gr. $\frac{1}{8}$ to 1, twice a day in pills.——*Tincture*, F. M. (Iodine, 1; alcohol at 35°, 12; twenty drops contain about 1 gr. of iodine;) gut. iv. to x. three times a day, in sugar and water. This dose may be increased as far as xxx. and even xl. drops.——*Iodurettted sulphuric ether*, F. M. (Iodine, 1; ether 6; thirty drops contain 1 gr. of iodine.) Dose, gut. iv. to x. at most, two or three times a day.

Externally, Iodine ointment, Brera. (Iodine, 1; axungia, 24.) ℈j. in friction. The tincture may be used in the same manner.

Hydriodate of Potassa. *Hydriodas potassæ.* This salt exists in most of the *Fuci*, in sponges, and in certain mineral waters.

P. P. It is in the form of cubic crystals, or quadrangular prisms, very deliquescent, opaque, of a milky white colour.

C. P. The hydriodate of potassa is composed of potassa, 37.42, and hydriodic acid, 100. It is very soluble in water and alcohol; the latter solution is capable of still dissolving a quantity of iodine equal to that it already contains, and then acquires a deep brown colour. When heated, this salt volatilizes without undergoing decomposition.

Prep. It is obtained by treating iodine with a solution of potassa, and separating the hydriodate by means of alcohol.

Th. E. It is exhibited in the same cases as iodine, and possesses

all its properties; it seems only less active, and of course not so liable to produce serious consequences.

D. & M. of Adm. Solution of *hydriodate of potassa*, F. M. (Hydriodate of potassa, 1; distilled water, 16.) Dose, from gut. x. to xx. three times a day, in a suitable menstruum. The dose may be increased gradually as high as ʒiij. a day. ——*Iodurettted solution of hydriodate of potassa*, F. M. (Hydriodate of potassa, 18; iodine, 5; distilled water, 288.) Dose, from gut. v. to x. three times a day. *Externally, Ointment of hydriodate of potassa*, Brera. (Hydriodate, 1; axungia, 24.) ʒss. to ʒj. for a friction.——*Iodurettted ointment of hydriodate of potassa*, F. M. (Hydriodate of potassa, 3; iodine, 1; axungia, 36.) ℈j. for a friction.

The hydriodates of soda, baryta, and lime, might be used under the same circumstances; but they have not as yet been employed in medicine.

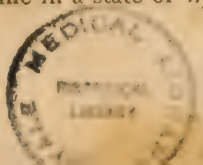
Sponge. *Spongia officinalis*, Lin. Calcined in closed vessels, it forms *spongia usta*, which was exhibited with advantage in bronchocele and scrofulous engorgements. This employment, which many practitioners considered as ridiculous, is now justified by the presence of a small quantity of iodine and alkaline hydriodates in the sponge. This substance was administered in the dose of ʒj. to ʒiij. mixed with honey, or in the form of lozenges, &c.

Hydriodated Mineral Waters.

Experience had long since proved the efficacy of certain sulphurous mineral waters in the cure of scrofulous affections, goitre, and generally in the obstructions of certain viscera. The very great success obtained from the employment of iodine in diseases of this nature, was calculated to induce us to think that this substance might exist in these waters. Mr. Angelini, and afterwards Mr. Cantù, have proved that they really contained a certain proportion of iodine in the state of hydriodate, which now very satisfactorily accounts for their mode of action. These waters, as regards their physical properties, do not in any way, differ from the other sulphurous waters with which, until lately, they have been associated. Their chemical properties have not as yet been satisfactorily ascertained; we only know that they contain an alkaline hydriodate.

The principal hydriodated waters are those of Castelnovo D'Asti, in Piedmont, which Mr. Cantù has principally examined and found to be very rich in iodine; those of Aix, in Savoy, which we have already mentioned, page 250. Those of Saint-Genis, very much used in Turin, in the treatment of goitre and scrofula; finally, those of Voghera, of Sales, &c. examined by Mr. Angelini.

[We may add to the above enumerated springs containing iodine in a state of hydriodate, the Saratoga, and perhaps also



the other springs in that vicinity. Dr. Steel has already demonstrated its presence in the Saratoga waters. See SARATOGA.]

These waters are administered in small doses, frequently edulcorated with milk; as baths, lotions, &c.

MERCURY. *Hydrargyrum*, quicksilver, a metal found in nature, in its native state, amalgamated with silver, in the state of sulphuret and in combination with chlorine. The principal mines from which it is furnished are in Spain, Frioul and Peru.

P. P. It is liquid, shining, white with a shade of blue, insipid, inodorous, of a specific gravity of 13.568. Exposed to a cold of — 40° Centig. (— 40° Fahr.) it becomes solid, and crystallizes in octahedrons; in this state it is slightly malleable.

C. P. At a common temperature, mercury is unalterable in the air; but with the assistance of heat, it combines with oxygen and form oxides. It begins to boil at 360° Centig. (680° Fahr.) and afterwards volatilizes; and this happens according to Mr. Faraday's assertion, at all temperatures. Gold, silver, tin, &c. combine when cold, with this metal and form alloys called *amalgams*. Mercury does not decompose water; but if boiled in this liquid, it absorbs $\frac{1}{500}$ of its weight, however, without becoming heavier, for water dissolves a small quantity of it, and thus acquires medicinal properties. Triturated with fat, or agitated for a length of time with water, it is divided to such a degree as to lose its metallic lustre, and forms then a blackish powder, which was considered as a protoxide, but is really nothing more than this metal in a state of great division.

PREP. It is by means of distillation that mercury is separated from the other metals with which it is amalgamated.

TH. E. All the mercurial preparations act almost in the same way. In consequence of the absorption of their particles, they exercise on the whole economy a stimulant action, which may be carried to such an extent as to produce an inflammatory action. But besides this general influence, mercury acts, in a very decided manner on the secretory organs and especially the salivary glands; it is thus that it frequently induces salivation, a fetid breath, an ulcerous inflammation of the mucous membrane of the mouth, &c. Another phenomenon still more inexplicable, is the effect this remedy produces on absorption; it increases the activity of this function, and under its influence, we occasionally see the visceral engorgements and tumours more or less voluminous disappear. Finally, the employment of mercurial preparations, when carried too far, induces a succession of very serious symptoms, such as emaciation, general debility, œdema, tremor of the limbs, palsy, ulcerations of the pharynx, and in a word, a sort of scorbutic marasmus.

Mercury and its different preparations are very much used in medicine. It is especially in the treatment of venereal diseases, that they are most frequently exhibited. Their *modus operandi*, in these cases, cannot be explained; but their utility is so far beyond doubt, that they have for a long time, been considered as specifics in these affections. Advantage is taken of the influence mercury exercises on absorption and nutrition, in order to reduce chronic engorgements of the viscera without inflammation, white swellings, &c. The action of mercury on the whole economy, characterized by salivation, emaciation, &c., seems to be followed by good effects in certain local inflammations. Dr. Laennec has employed this medication with success in the treatment of puerperal peritonitis, and the American and English practitioners administer daily, these preparations, not only in similar cases, but in continued cholera morbus, yellow fever, plague, inflammations of the brain and of its meninges, known by the names of cerebral fevers, acute and chronic hydrocephalus, &c. Finally, this metal is still used, either externally or internally, in certain herpetic, scrofulous and verminous affections.

D. & M. of Adm. *Internally*, water charged with mercurial particles by means of ebullition, ℥j. to ℥iij.——*Hydrargyrum cum creta*, L. (Mercury, ℥iij.; prepared chalk, ℥v.)—D. (Mercury and manna, āā. ℥j.; prepared chalk, ℥ss.) ——*Hydrargyrum cum magnesia*, D. (Mercury and manna, āā. ℥j.; magnesia, ℥ss.)—Three grains contain about one of mercury. Dose, from gr. v. to ℈j.; twice a day, in syrup or mucilage.——*Pilulæ hydrargyri*, U. S. (Mercury, conserve of roses, āā. ℥j.; liquorice root, ℥ss.)—Five grains of the mass contain two grains of mercury.—L. D. (Mercury, ʒij.; confection of roses, ʒiij.; liquorice root, ʒj.)—Three grains of the mass contain one of mercury.—E. (Mercury and conserve of roses, āā. ℥j.; starch, ℥ij.)—Four grains of the mass contain one of mercury. Dose, from gr. vj. to gr. viij., twice a day.——*Pilulæ hydrargyri cum rheo*, Guy's H. (Mercurial pill and rhubarb, āā. ʒij.; water as much as necessary, for twenty-four pill. Dose, No. j. to ij., twice a day.—— *Mercurial pills*, Paris H. (Mercury and conserve of cynorrhodon, āā. ʒj.; for thirty-six pills, No. ij. to iv. a day, seldom more than vj.——*Pilulæ hydrargyri compositæ*, P. (Mercury, 4; honey, 24; aloes and scammony, āā. 8; cinnamon and mace, āā. 1; for four grains pills, four of which contain about one grain of mercury.) Dose, from gr. xii. to ℈j.——*Beloste's pills*, Paris H. (Mercury, ℥iij.; supertartrate, gr. x.; scammony and jalap, āā. ʒij.; syrup, q. s.) Dose, from gr. x. to xv. and as a purgative, gr. xxx., in pills.)——*Plenck's gummous mercury*, P. (Mercury, 1; gum arabic, 3; syrup of opium, 4.)

Externally. Unguentum hydrargyri, U. S. (Mercury and axungia, āā. 3 parts; suet, 1 part.)—1 drachm contains 26 grains of mercury.—L., D., P., F. (Mercury and axungia, (with suet or wax,) āā. equal parts.) 1 drachm contains gr. xxx. of mercury.—E. (Mercury and suet, āā. 1 part; lard, 3 parts.) 1 drachm contains gr. xij. of mercury.)——*Unguentum hydrargyri mitius*, L., D. (Stronger mercurial ointment, 1 part; prepared lard, 2 parts.)—P. (Stronger mercurial ointment, 1 part; axungia, 3 parts.)——*Unguentum hydrargyri cinereum*, Pr., Pol., R. (Mercury, 1; hog's lard mixed with a small quantity of suet, 2.)—Den., A. (Mercury, 3; hog's lard and tallow, āā. 1.) These ointments are used in frictions of from ʒss. to ʒij., and sometimes exhibited internally.——*Linimentum hydrargyri*, L. (Stronger mercurial ointment and prepared lard, āā. ℥iv.; camphor, ℥j.; alcohol, ♏xv.; solution of ammonia, f.℥iv.) ——*Mercurial liniment*, Paris H. (Strong mercurial ointment and water of am-

monia, āā. ʒj.; olive oil, ℥j.) ʒj. in frictions.——*Emplastrum hydrargyri*, U. S., E., B. (Olive oil, pine resin, āā. 1 part; mercury, 3 parts; lead plaster, 6 parts.) —L. (Mercury, ℥iij.; sulphuretted oil, f.ʒj.; lead plaster, ℔j.)——*Emplastrum hydrargyri compositum* seu *emplastrum de Vigo cum mercurio*, P. (Mercury, 95; liquid styrax, 48; simple plaster, 312; wax, resin, and turpentine, āā. 16; gum ammoniac, bdellium, olibanum and myrrh, āā. 5; saffron, 3; oil of lavender, 2.)——*Emplastrum hydrargyri*, A., R. (Mercury, 6; turpentine, 1; litharge plaster, 24.)—Pr., Pol. (Mercury, 4; wax, 3; turpentine, 2; litharge plaster, 12.)

Proto-chloride of Mercury. *Hydrargyri proto-chloruretum. Hydrargyri sub-murias mitis* sive *calomelas*, mild submuriate of mercury, or calomel. It is always the product of art.

P. P. This solid, white, semitransparent compound, becomes slightly yellow by exposure to the air and by rubbing; it crystallizes in crossed and prismatic needles, is inodorous, tasteless, and of a specific gravity of 7.17.

C. P. It is formed of mercury, 100, and chlorine, 7.596. It is completely insoluble in water and alcohol. Heated it evaporates. It turns black by contact with alkalies and hydro-sulphuric acid. It dissolves in chlorine and passes to the state of deuto-chloride.

Incomp. Subst. Alkalies, lime water, sulphurets of potassa and antimony; iron, copper, lead, &c.

Prep. Heat in close vessels, equal parts of metallic mercury, and of deuto-chloride of mercury; the calomel sublimes and condenses in the receiver. It is needful to purify it, and liberate it from the small quantity of corrosive sublimate which might have escaped decomposition and passed in vapour with it, and in order to obtain this end, it must be washed and then sublimed anew.

Th. E. Proto-chloride of mercury, acts upon the intestinal canal like purgatives, that is, it provokes in certain doses, more or less abundant alvine evacuations. Administered in small doses, it seems to be absorbed, and then acts like the other mercurial preparations. It is one of the remedies most usually employed, principally by American and English practitioners, who have recourse to it under a number of circumstances, and of which they sometimes make too free an use.

D. & M. of Adm. *As a purgative*, gr. v. to xv. *As an alterative*, gr. j. to gr. v., a day in pills.——*Pilulæ hydrargyri sub-muriatis*, U. S. (Calomel, ʒss.; Castile soap, ʒj.; for 30 pills.)——*Pilulæ hydrargyri sub-muriatis compositæ*, vulgo *Plummer's pills*, L., E. (Calomel and precipitated sulphuret of antimony, āā. ʒj; resin guaiacum, ʒij; mucilage, a sufficient quantity.) Dose, from gr. v. to gr. x., given night and morning.—New York H. (Sub-muriate of mercury, ℥ss.; starch, ℥j.; opium, ℈iv; mucilage of gum Arabic, q. s. for pills, No. ccxl.)——*Pilulæ purgantes cum mercurio*, Den. (Calomel, 4; extract of rhubarb, 8; resin of jalap, 1; oil of orange peel, q. s.)——*Soap and mercury pills*, Paris H. (Calomel and resin of jalap, āā. gr. j.; medicinal soap, gr. ij.)——*Pilulæ hydrargyri cum ipecacuanha*, Guy's H. (Calomel, gr. v.; ipecacuanha, gr. x.; conserve of roses, q. s., for ten pills.) No. 1, two or three times a day.——*Dr. Paris' purgative*

pills, (Calomel, gr. x.; compound gamboge pills, and compound extract of colocinth, āā. gr. xv.; ginger syrup, q. s.; for 12 pills.) No. ij. at night.——*Dr. Paris' anthelmintic bolus*, (Calomel, gr. v.; gamboge, gr. viij.; mucilage of gum Arabic, q. s.) For a bolus.

Externally, gr. ¼ to j., in frictions upon the gums, or around the gland penis, as anti-syphilitic.——*Lotio hydrargyri nigra, or black wash*, New York H. (Sub-muriate hydrargyri, ʒj.; lime water, f.ʒviij.)——*Unguentum hydrargyri sub-muriatis*, Guy's H. (Calomel, ʒj.; cerate, ʒj.)——*Resolvent salve*, Paris H. (Calomel and fresh squill, āā. ʒss.; axungia, ʒij.; otto of roses, gut. iv.)——*Anti-herpetic salve*, Paris H. (Calomel, ʒj.; flower of sulphur, ʒj.; axungia, ʒj.)

Deuto-chloride of Mercury. *Hydrargyri deuto-chloruretum. Hydrargyri oximurias.* Oxymuriate of mercury. Corrosive sublimate. It exists in nature, but in very small quantities. That which is used is always the product of art.

P. P. This compound is found in the shops in the form of circular pieces, white, semitransparent on the edges; convex, smooth, and shining on one side; concave, and presenting a number of small and confused crystals on the other; unalterable in the air, inodorous, of a taste extremely acrid, caustic, and metallic. Its specific gravity is 5.398.

C. P. It is composed of mercury, 100; and chlorine, 36. It dissolves in twenty parts of cold, and three of boiling water, and passes then to the state of hydro-chlorate of deutoxide of mercury; alcohol and ether especially dissolve it still more easily. Heated, it volatilizes without being decomposed, and produces a white smoke, of a penetrating smell. It is soluble in sulphuric, nitric, and hydro-chloric acids, without undergoing decomposition.

Incomp. Subst. Alkalies and their carbonates, tartar emetic, sulphuret of potassa, soaps, iron, copper, lead, metallic mercury, tanning vegetable substances, &c.

Prep. Heat in close vessels a mixture of four parts of hydrochlorate of soda, one part of per-oxide of manganese, and five parts of sulphate of mercury. The deuto-chloride which is formed volatalizes, and condenses on the superior sides of the vase.

Th. E. In the dose of a few grains, corrosive sublimate is one of the most active poisons. Administered in very small doses, it induces the general phenomena we have mentioned above. (See page 272.) It is very often used in the treatment of venereal diseases, principally of those of long standing, and of an obstinate character, which are wrongly called constitutional. Its exhibition requires great attention and prudence.

D. & M. of Adm. Gr. ⅛ to ¼ in pills, or dissolved in water.——*Corrosive sublimate pills*, Paris H. (Corrosive sublimate, gr. xx.; starch, ʒss.; gum Arabic, ʒij.; water, q. s. for 144 pills, each of which contains ⅛ of a grain of corrosive sublimate.) Dose, from No. j. to iv. a day.——*Pilulæ hydrargyri oximuriatis*, Guy's H. (Sublimate, gr. vijss.; hydro-chlorate of ammonia, gr. x.; boiling water, ʒij.; crumb of bread, q. s. for 40 pills, each contains ⅛ of a grain.) Same doses.——*Pilulæ hydrargyri muriatis*, New York H. (Muriate of mer-

cury, and muriate of ammonia, āā. ℈ij.; distilled water, a sufficient quantity to dissolve them; starch, ʒvj.; for 140 pills.)——*Pilulæ hydrargyri compositæ*, New York, H. (To the above mass add opium, ʒj.; for the same number of pills.)——*Anti-syphilitic pills*, Paris H. (Corrosive sublimate, and opium, āā. gr. ij.; extract of bark, gr. xl.; pulv. bark, q. s. for 4 pills.) Dose, No. ij. a day.——*Liquor hydrargyri oximuriatis*, U. S., L., *Van Swieten's liquor*, P. (Sublimate, gr. viij.; alcohol, ʒj.; distilled water, ʒxv. Every ounce contains gr. ½ of corrosive sublimate.) Dose, from ʒij. to ʒj. progressively in four ounces of a mucilaginous menstruum.——*Aqua muriatis hydrargyri corrosivi*, F. (Corrosive sublimate, and hydro-chlorate of ammonia, āā. 1; distilled water, 800; simple syrup, 160. Every ounce contains gr. ½ of corrosive sublimate.)—Pr., Pol. (Corrosive sublimate, and hydro-chlorate of ammonia, āā. 1; distilled water, 480; honey of roses, 20. This liquor contains gr. j. of corrosive sublimate per ounce.)——*Mercurial ether*, Cheron. (Corrosive sublimate, gr. xvj.; sulphuric ether, ʒj.; ʒj. contains gr. ½ of corrosive sublimate.) Dose, from ʒss. to ʒj.——*Syrup of mercurial ether*, Cheron. (Mercurial ether, ʒj.; simple syrup, ℔ij. Each ounce contains gr. ½ of corrosive sublimate.) Dose, from ʒss. to ʒj., and more progressively.

Externally. Mercurial bath, Paris H. (Corrosive sublimate, ʒij. to ʒj. gradually; boiling water, ℔cc.)——*Mercurial lotion*, Paris H. (Corrosive sublimate, ʒj.; distilled water, ℔j.; alkanet root, q. s.)——*Lotio hydrargyri muriatis*, New York H. (Muriate of mercury, gr. viij.; water, f.ʒviij.)——*Lotio hydrargyri flava*, New York H.——Phagedænic water, *Eau phagédénique*, P. (Muriate of mercury, gr. viij.; lime water, ʒviij.)——*Mercurial gargle*, Paris H. (Corrosive sublimate, gr. ij.; distilled water, ʒiv. syrup of honey, ʒss.——*Mercurial injection with opium*, Paris H. (Corrosive sublimate, gr. xij.; distilled water, ℔ij.; Sydenham's laudanum, ʒj.)——*Cyrillo's salve*, P. (Corrosive sublimate, 1; axungia, 8.) ʒss. to ʒj., for a friction.——*Escharotic troches*, P. (Corrosive sublimate, 1; starch, 2; mucilage of gum tragacanth, q. s.)

Protiodide of Mercury. *Hydrargyri proto-ioduretum.* This compound is always the product of art.

P. P. It is pulverulent, of a greenish-yellow colour, inodorous, of a slight metallic state.

C. P. It is composed, according to Thomson, of mercury, 250, and iodine, 156. It is unalterable in the air, but is decomposed by light; insoluble in water and alcohol, and soluble in ether. Heated, it volatilizes in yellow fumes, which, coming in contact with copper plates, produce metallic mercury.

Prep. It is obtained by pouring a solution of hydriodate of potassa into a solution of one part of proto-nitrate of mercury in four parts of distilled water, until no more precipitate is produced. The precipitate is washed with care, in order to liberate it from all the nitrate which might have escaped decomposition.

Th. E. See below Deutiodide of Mercury.

D. &. M. of Adm. Internally, gr. ⅛ to ¼, in pills.——*Pills of protiodide of mercury*, F. M. (Protiodide of mercury, gr. j.; extract of juniper, gr. xij.; liquorice, q. s. for 8 pills.) Dose, from No. 4 to 8 a day.——*Ether of protiodide of mercury*, F. M. (Protiodide of mercury, 1 part; sulphuric ether, 48 parts.) 26 drops contain about ⅛ of iodide, (gut. v. to xv. in distilled water.)

Externally. Salve of protiodide of mercury, F. M. (Protiodide of mercury, 1 part; axungia, 44.)—Paris H. (Protiodide of mercury, ʒss.; axungia, ʒjss.; essential oil of bergamot, gut. xv.; every drachm contains gr. iij. of mercurial iodide.) In very small quantity upon obstinate venereal ulcers.

Deutiodide of Mercury. *Hydrargyri deuto-ioduretum.* Is not found in nature.

P. P. This is a red powder, which, submitted to heat, turns yellow, melts, and acquires an unctuous appearance, it afterwards volatilizes in reddish-yellow fumes, condensing in rhomboidal scales of a golden-yellow colour, which, on cooling, become red.

C. P. It contains 250 of mercury, and 312 of iodine. It is insoluble in water, but soluble in alcohol, ether, hydriodate of potassa, and mercurial salts. Air has no action upon it, but light decomposes it.

Incomp. Subst. Its alcoholic solution is decomposed by water which has not been distilled.

Prep. It is obtained by mixing a solution of 100 of hydriodate of potassa with another of 70 of corrosive sublimate. The precipitate is collected and washed with care, and then dried.

Th. E. The two compounds we have just been treating, that is, the protiodide and deutiodide of mercury, combine the energetic properties of the two elements out of which they are formed. To Dr. Biett we are indebted for their introduction into the materia medica, for they had been merely mentioned by Dr. Coindet, of Geneva. It is principally in scrofulous affections complicated with syphilis, in engorgements of the ganglia, and chronic ulcerations produced by constitutional venereal disease, that these remedies are used. They sometimes produce salivation, and, besides, their action being very energetic, especially that of the deutiodide, their employment requires the greatest caution.

D. & M. of Adm. *Internally*, gr. one-sixteenth to one-fourth, in pills.——*Pills of deutiodide of mercury*, F. M. (Deutiodide of mercury, gr. j.; extract of juniper, gr. xij.; pulv. liquorice, q. s. for 8 pills.) Dose, from No. ij. to iv. a day.——*Tincture of deutiodide of mercury*, F. M. (Deutiodide of mercury, 1; alcohol of 36° of Baumé's areometer, 48; 26 drops contain $\frac{1}{8}$ of a grain of iodide.) Dose, from gut. x. to gut. xx. in distilled water.——*Ethereal tincture of deutiodide of mercury*, F. M. (Deutiodide and ether, same proportions as above.) Dose, from gut. v. to x.

Externally. Ointment of deutiodide of mercury, F. M. (Deutiodide of mercury, 1 part; axungia, 48.)—Paris H. (Deutiodide of mercury, gr. xv.; axungia, ℥ij.; essential oil of bergamot, gut. xv.) In small quantities in obstinate venereal ulcerations.

Red Sulphuret of Mercury. *Hydrargyri sulphuretum rubrum.* Cinnabar. Vermilion. It is found abundantly in nature, but in a state of impurity. It is prepared by artificial means for commercial purposes.

P. P. Cinnabar is in amorphous masses of different sizes, composed of a great number of crystalline needles, disposed in parallel and contiguous rows, of a violet colour, changing to a lively red by friction or pulverization; its specific gravity is 10.218.

C. P. It is composed of mercury 100, and sulphur 15.88. It is unalterable in the air, insoluble, and volatile at a moderate heat.

It is decomposed at a high temperature, and is transformed into sulphurous acid and metallic mercury.

Prep. Let mercury, much divided by means of a chamois skin, fall into melted sulphur, bruise the melted mixture, and sublime it once or twice with a moderate heat.

Th. E. Red sulphuret of mercury was formerly exhibited internally in diseases of the skin, gout, and chronic rheumatism. It is now used only externally, in fumigations in several chronic affections of the skin, in cases of syphilitic exostosis, in obstinate ulcers of the same nature, &c. Finally, Dr. Biett uses it with much success in *Prurigo pedicularis*.

D. & M. of Adm. *Internally*, gr. x. to ℈j. in pills, or incorporated in an electuary.——*Stahl's temperant powder*, P. (Sulphuret of mercury, 2; nitrate and sulphate of potassa, āā. 9.) Dose, from gr. vj. to ℈j.

Externally. Ointment of red sulphuret of mercury, Paris H. (Sulphuret of mercury, ʒjss.; hydro-chlorate of ammonia, ʒss.; rose water, ʒj.; axungia, ʒij.) Fumigations, ʒij. to ʒiv. in the apparatus for sulphurous fumigations, or upon an iron plate heated red hot.

Black Sulphuret of Mercury, *Hydrargyri sulphuretum nigrum*, or mineral Ethiops, is nothing more than a mixture of red sulphuret and metallic mercury. It is in very fine powder, of a violet black colour, inodorous, tasteless, and insoluble. It was formerly employed as a diaphoretic and vermifuge: it is now seldom used, except externally, in the form of salve, as anti-psoric. The dose, internally, is from gr. v. to ℈j. It enters into the composition of the *Mercurial vermifuge powder*, P. (*Pulvis de tribus** and black sulphuret of mercury, āā. equal parts in weight.)

Cyanuret of Mercury. *Hydrargyri cyanuretum* seu *prussias*. Prussiate of mercury. It is always the product of art.

P. P. When perfectly neutral, this compound is colourless, crystallizes in quadrangular prisms, with an oblique fracture, of a very styptic and disagreeable taste, inodorous, and of a considerable specific gravity.

C. P. It is composed of mercury, 100, and cyanogen, 26.089 in weight. It dissolves in cold, and still better in boiling water. This menstruum yields it to ether. Heated, it melts, turns black, and is partially decomposed.

Prep. Boil two parts of Prussian blue with one part of deutoxide of mercury in water.

Th. E. Cyanuret of mercury is a corrosive poison, almost as deleterious as the deuto-chloride of this metal. This remedy has, however, been recently introduced into the materia medica, and

* (Jalap and scammony, āā. 1; super-tartrate of potassa, 2.)

several practitioners, among which are Drs. Cullerier the nephew, Gilbert, and Professor Chaussier, have administered it with success in obstinate venereal diseases. Dr. Biett has exhibited it with advantage in cases of humid squamous tetters, attended with a violent itching. Its administration requires the greatest prudence on account of its poisonous properties.

D. & M. of Adm. Gr. one-eighth to one-sixth a day, in pills.——*Solution of cyanuret of mercury*, (Cyanuret of mercury, ℈j.; distilled water, ℔ij.; one ounce contains gr. ¾ of cyanuret) Dose, from half an ounce to one in a mucilaginous drink.——*Ointment of cyanuret of mercury*, Paris H. (Cyanuret of mercury, gr. xvj.; axungia, ℥j.; essence of lemon, gut. xv.)

Black Oxide of Mercury. *Oxidum hydrargyri nigrum.* Protoxide of mercury. It is not found in nature.

P. P. It is in the form of a black powder, very heavy, inodorous, of a harsh taste. By being compressed and examined with attention, globules of metallic mercury may be perceived in it.

C. P. This substance, according to Guibourt's opinion, which is generally adopted in France, is a mixture of deutoxide and metallic mercury, extremely divided. It is insoluble in water, but it dissolves in nitric acid. Heated, it is completely reduced to vapour.

Prep. It is obtained by pouring, drop by drop, into a solution of caustic potassa, one part of pure proto-nitrate of mercury dissolved in sixteen parts of distilled water, very slightly acidulated with nitric acid; otherwise the proto-nitrate would be transformed into a nitrate with an excess of acid, and into an insoluble yellow sub-nitrate. In order to be more certain of obtaining a very black oxide, it is proper that the solutions from which it is precipitated should contain a small excess of alkali. This oxide is also prepared, according to the American and English Dispensatories, by boiling sub-muriate of mercury in lime water.* The precipitates must be washed and dried with a moderate heat.

* [Mr. T. Evans, of Philadelphia, has proposed the following process for the preparation of this oxide. (Sublimed sub-muriate of mercury, ℥iv.; pure caustic potassa, ℥iv.; distilled water, ℔j.) Dissolve the potassa in water, mix the sub-muriate with this solution, and shake them frequently. Pour off the liquid and wash the precipitate with distilled water until the muriate of potassa is totally removed; then dry the residuum with a very gentle heat. This preparation Mr. Evans considers as being superior to those of the English and American Dispensatories.

Dr. B. H. Coates, who has frequently exhibited this oxide, considers it as a valuable medicine. Used as a substitute for calomel it appears to be more apt to vomit, and to act more as a cathartic; two grains, in almost every instance, procured several evacuations. He further adds, that it is also a milder *contra-stimulant* than calomel, and as an alterative it is beyond all comparison preferable to

Grey Oxide of Mercury. *Oxidum hydrargyri cinerei.* Sub-proto-nitrate of mercury and ammonia. Hahnemann's soluble mercury. This oxide is obtained by pouring liquid ammonia into a solution of pure proto-nitrate of mercury.

Th. E. Both these oxides are very seldom used; however, German practitioners still exhibit them in some cases in which the employment of mercury, in a state of great division, is indicated. They think that these preparations do not provoke salivation so easily. However, as their composition is apt to vary, so their effects are very uncertain.

D. & M. of Adm. *Internally.* Gr. ½ to gr. v. a day, in pills.——*Hahnemann's pills,* Paris H. (Gray oxide of mercury, ℈j.; gum Arabic and sugar, āā. ʒss.; for 32 pills.) Dose, from No. iij. to iv. a day.

Externally. Unguentum oxidi hydrargyri cinerei, U. S., E. (Black oxide of mercury, 1; axungia, 3.) In frictions, ʒss. to ʒj.

Proto-nitrate of Mercury. *Hydrargyri proto-nitras.* This salt is always the product of art.

P. P. It is in the form of prismatic crystals, white, of an acrid and styptic taste, inodorous, and very heavy.

C. P. Proto-nitrate of mercury is composed of nitric acid, 100, and protoxide of mercury, 388.73. It generally reddens litmus. Dissolved in water, it is decomposed and forms a super-proto-nitrate remaining in solution, and an insoluble sub-proto-nitrate, which precipitates in the form of a greenish-yellow powder. Heated, it changes to a deutoxide, which is reduced if the heat be sufficiently high.

Prep. Dissolve 200 parts of mercury in 180 parts of nitric acid at 25°. When no more nitrous vapours are disengaged, add 100 parts of warm distilled water, and subject the liquor to a slight ebullition. Then, decant the liquor, and soon after, crystals will begin to form. By evaporating the mother-waters, purer crystals will be obtained. The purity of the proto-nitrate of mercury may be ascertained by the following characters. Its solution is entirely decomposed by the muriates of potassa or soda, and the filtered liquor does not form a yellow precipitate with potassa, or a black one with hydro-sulphuric acid.

Th. E. It is very seldom employed internally, except in conjunction with syrup, as an anti-syphilitic. Externally, it is used as a stimulant, detersive, and escharotic.

the blue pill, prepared as it is, in the ordinary way, by trituration, is more certain, efficient, and regular in its operation. Half a grain is quite a sufficient dose to be taken at bed-time, and probably one-fourth of a grain might answer the purpose, as this quantity appears to be equal in strength to three or four grains of the blue mass. See the Journal of the Philadelphia College of Pharmacy, No. II. first series.]—Am. Eds.

D. & M. of Adm. *Internally. Syrupus nitratis hydrargyri*, or *Dr. Belet's syrup.* (Nitrate of mercury, 3 parts; nitric ether, 1 part; simple syrup, 256 parts.) One ounce contains rather more than six grains of nitrate; the dose is from ʒij. to ʒiv. in a mucilaginous menstruum.

Externally. Liquor mercurialis, P. (Mercury, 4; nitric acid, 3; distilled water, 30 parts.)

At the Hôtel Dieu and St. Louis' hospitals, a solution of crystallized proto-nitrate of mercury in eight parts of nitric acid is used, under the name of Super-nitrate of Mercury, *(Nitrate de mercure acide.)* It is a transparent and colourless liquid, which turns green by the action of light, inodorous, and of a metallic and caustic taste. This super-nitrate of mercury is one of the most energetic caustics, which seems, at the same time, to act in a peculiar manner upon the tissues to which it is applied. It changes, as it were, their mode of vitality. It is daily used in the above-mentioned hospitals, against spreading tetters, cancerous ulcers of the skin, and even those of the neck of the womb. Dr. Goddard, to whom we are indebted for these details, thinks that it is preferable, in a great number of cases, to arsenical preparations, because it is not commonly absorbed; and, besides, it seems to act in a more certain manner. It is applied to the diseased part with a brush, and covered over with lint, which is afterwards soaked with the same caustic liquid.

[The Solution of Mercury in an excess of hot nitric acid, contains both proto-nitrate and deuto-nitrate of mercury.* It is used only externally.]

D. & M. of Adm. *Unguentum hydrargyri nitratis fortius*, U. S., E. (Mercury, 1 part; nitric acid, 2 parts; olive oil, 9 parts; lard, 3 parts.)—L. (Mercury, ʒij.; nitric acid, f.ʒxi.; prepared lard, ʒvj.; olive oil, ʒiv.)—D., F. (Mercury, ʒj.; nitrous acid, ʒij.; olive oil, Oj.; lard, ʒiv.)—P. (Mercury, 2; nitric acid, 3; lard, 32.)——*Unguentum hydrargyri nitratis mitius*, U. S., E. (This ointment is made in the same manner as the stronger ointment, with a triple proportion of hog's lard and sweet oil.)

Acetate of Mercury, *Hydrargyri acetas*, is in the form of crystalline scales, white, but turning black by exposure to light; of an acrid and metallic taste, and almost insoluble in water and alcohol. It is prepared by treating the deutoxide of mercury with acetic acid, and crystallizing the liquor.† This remedy is seldom

* [Potassa and soda form a yellow precipitate with the deuto-nitrate, and a black one with the proto-nitrate.]—Am. Eds.

† [Mr. Garot has ascertained that two acetates of mercury are formed by this process, a protacetate and a deutacetate. It appears that the occasional violent operation of the Keyser's pill is owing to the presence of the latter. Mr. Vallée, former Professor of the School of Pharmacy of Paris, prepared this pill by double decomposition between the proto-nitrate of mercury and the acetate of lime.] —Am. Eds.

employed at present; it enters into the composition of several officinal preparations, and amongst them is that of *Keyser's anti-syphilitic pills.* (Acetate of mercury, ℥ij.; sugar, ℥vj.; gum arabic, ℥ss.; mucilage, q. s. for 1 gr. pills, which contains one-fourth of acetate of mercury. Dose, from two to four a day.

The Sub-deuto-sulphate of Mercury, or Turpeth Mineral, is yellow, insoluble in water, and decomposable by heat. It was once employed as an emetic and a diaphoretic, but at present it is almost discarded. It enters, however, into the composition of several anti-herpetic ointments, such are *Cullerier's anti-herpetic ointment*, Paris H. (Turpeth mineral and laudanum, āā. ℥j.; sublimed sulphur, ℥ss.; axungia, ℥j.) *Turpeth mineral ointment*, Paris H. (Turpeth mineral, ℥ij.; axungia, ℔ij.;) which is exhibited with advantage, in friction, in cases of slightly inflammatory tetters.

Chloride of Gold. *Auri chloruretum. Auri murias.* Muriate of gold. This compound is always the product of art.

P. P. It is under the form of small crystalline needles, of a fine yellow colour, inodorous, of a styptic and very disagreeable taste. It is deliquescent only when it contains an excess of hydrochloric acid.

C. P. The chloride of gold is very soluble in water, to which it gives a yellow colour. It reddens litmus; vegetable and animal substances are coloured by it of a violet colour. With a gentle heat, it is changed into a proto-chloride; and, at a higher temperature, it is decomposed, and leaves a residuum of metallic gold.

Incomp. Subst. The acid, gummous, saccharine and extractive vegetable juices, alkalies, &c.

Prep. Dissolve one part of pure gold in three of nitro-muriatic acid; evaporate with a gentle heat, and let it crystallize.

Th. E. According to Professor Orfila's experiments, the preparations of gold, and especially that which is the subject of this article, in large doses, act upon the economy, in the same manner as corrosive poisons. In small doses, according to Dr. Chrestien, of Montpellier, they are endowed with general stimulant properties, more energetic than those of the corrosive sublimate, and without acting as powerfully upon the salivary glands. These preparations, once so much used and highly spoken of by alchemists, had completely fallen into oblivion, when in 1810, Dr. Chrestien proposed their employment in constitutional syphilitic diseases in which mercury had failed, scrofulous and herpetic affections, goitre, scirrhous tumours, &c. Dr. Cullerier, the nephew, and other practitioners, have exhibited the preparations of gold with various results. However, they may prove very use-

ful under several circumstances, but their employment requires the greatest circumspection, on account of their very deleterious properties. They are commonly administered in frictions upon the gums and tongue. This method seems preferable, inasmuch as the salt of gold is not so apt to be decomposed.

D. & M. of Adm. *Internally*, gr. one-twentieth to one-tenth, a day, in pills with starch, or in solution in distilled water. In frictions, in the interior of the mouth, gr. one-sixteenth to one-sixth, mixed with ten, twelve, or fifteen times its weight of lycopodium, or starch.

Chloride of Gold and Sodium. *Auri et sodii chloruretum.* Muriate of gold and soda, a triple combination, which does not exist in nature.

P. P. This compound is in the form of prismatic, quadrangular and elongated crystals, deliquescent, of a very lively yellow colour.

C. P. According to Mr. Figuier, it is composed of 69.3 of chloride of gold, 14.1 of chloride of sodium, and 16.6 of water. It is very soluble in water.

Prep. It is obtained by dissolving four parts of gold in nitro-muriatic acid, evaporating this solution, and treating it afterwards with water, containing in solution one part of chloride of sodium. By a well managed evaporation, it deposits crystals.

Th. E. The same as those of the preceding; with this exception, however, that Dr. Chrestien employs it more frequently.

D. & M. of Adm. Gr. one-twentieth to one-tenth in pills. *Pills of chloride of gold and sodium*, Chrestien. (Chloride of gold and sodium, gr. j.; extract of mezereon, ʒij.; for sixty pills, each of which contains one-sixtieth of triple chloride.) Dose, No. j. to viij. a day.——*Powder of muriate of gold and soda*, Figuier. (Chloride of gold and sodium, gr. ʃ; orris root, gr. ij.½; for fifteen doses.) No. j. in frictions upon the tongue and gums.——*Ointment of muriate of gold and soda*, F. M. (Muriate of gold and soda, gr. one-tenth; axungia, gr. 36.) to be applied on a surface, previously deprived of the skin by means of a small blister.

The Deutoxide of Gold, *Auri deutoxidum*, is likewise employed in medicine. It is pulverulent, of a brown-violet colour, when dry, yellow in the state of hydrate, insoluble, and very easily reduced by heat, or by its mixture with a substance having a great affinity to oxygen. It is obtained by treating the chloride of gold, dissolved in water, with carbonate of potassa. Dr. Chrestien administers it, principally, in scrofula and lymphatic engorgements. *Pills of oxide of gold*, F. M. (Oxide of gold, gr. vj.; extract of mezereon, ʒij.; for 60 pills, each of them containing gr. $\frac{1}{10}$ of oxide.) Dose, from No. ij. to x. a day.

Finally, the Metallic Gold, *Aurum*, minutely divided by

means of mercury, has been recommended by Dr. Niel as a substitute for the other preparations of this metal, when the state of the mouth does not admit of its employment in frictions. He administers it by the endermic method, that is, applied in the form of a salve on a part deprived of the epidermis. *Gold ointment*, F. M. (Gold minutely divided, gr. j.; axungia, gr. 36.)

Hydro-chlorate of Platina and Soda has been employed by Dr. Cullerier in the same cases and manner as the muriate of gold and soda, and with the same results. It is now out of use.

Chloride of Barium. *Barii chloruretum* seu *Barytæ murias*. Muriate of baryta. It is not found in nature.

P. P. This chloride crystallizes in four-sided prisms, flattened, transparent, decrepitating in the fire, unalterable in the air, of a very bitter, sharp, and nauseous taste. Its specific gravity is 2.8257.

C. P. It is composed of baryta, 211.43; and chlorine, 100. It is soluble in four parts of cold, and two parts of boiling water, and is then converted into the state of hydro-chlorate. Heated, it melts without being decomposed. Sulphuric acid and the sulphates decompose it rapidly.

Incomp. Subst. The alkaline and metallic sulphates, and nitrates; the phosphates, and carbonates.

Prep. By melting together some sulphate of baryta and chloride of calcium, which are transformed into a sulphate of lime and a chloride of barium, and separating them by means of water, which dissolves the latter only.

Th. E. In large doses this salt is a violent poison. The symptoms which it then produces, depend in a great measure on its local action, but principally on the influence it exercises on the nervous system. Used in very small doses it seems capable of being useful in scrofulous diseases, scirrhous affections, dropsy, &c. It has been employed as an anthelmintic. It is now very seldom administered, and its exhibition requires the greatest prudence, on account of its deleterious properties.

D. & M. of Adm. Gr. ¼ to ½ in a gummous menstruum.——*Solution of muriate of baryta*, P. (Chloride of barium, 1; distilled water, 5.)——*Solutio muriatis barytæ*, E. (Chloride of barium, 1; distilled water, 3.) Dose, from gut. ij. to gut. x.——*Liquor terræ ponderosæ salitæ*, Den. (Chloride of barium, 1; distilled water, 48; ℥j. contains gr. ½ of muriate.) Dose, from gut. vj. to ℥j., in a mucilaginous mixture.

Externally, as a stimulant and a weak escharotic, in lotions, on scrofulous ulcers; but it must be used with caution, as it is easily absorbed.

Hydro-chlorate of Lime. *Calcis hydro-chloras*. It exists in materials containing saltpetre, and in the waters of several springs.

P. P. It crystallizes in six-sided prisms, striated, and terminated in pyramids, very deliquescent, of an acrid, bitter, and very sharp taste.

C. P. It is composed of lime, 51.90; and hydro-chloric acid, 48.10. It is very soluble in water. Heated, it melts, liberates a small quantity of acid, and changes into a chloride of calcium, under the form of a coarse gray powder, attracting powerfully the moisture of the atmosphere, and which is composed of 42.61 of chlorine, and 37.59 of calcium.

Incomp. Subst. The sulphuric, nitric, phosphoric, and boracic acids, and their salts; the alkalies, and their carbonates, &c.

Prep. By treating the carbonate of lime by the liquid hydro-chloric acid.

Th. E. This salt exercises a stimulant influence upon the whole economy, but it acts more particularly upon the lymphatic glands. Its mode of action is analogous to that of muriate of baryta; but it is not so poisonous as the latter, and it is, consequently, to be preferred to it. It is used to discuss scrofulous affections, lymphatic engorgements of the glands, in cases of general debility, &c. In large doses it is a purgative. It is now very seldom used.

D. & M. of Adm. Gr. vj. to ʒj., dissolved in water.——*Liquor calcis muriatis*, L. (Muriate of lime, 2; distilled water, 3.) Dose, from gut. xxx. to ʒj., in 2 ounces or more of water, 2 or 3 times a day.

§ V. Stimulant Remedies, the action of which is especially spent upon the Nervous System.

As the *modus operandi* of the stimulant substances which act principally upon the nervous system is very various, it would be difficult to speak of them in a general way. In fact, both alcohol and nux vomica belong to this class; but their effects, as is well known, have no resemblance whatever. There is, however, a certain number of these remedies which have with each other a great analogy with respect to their mode of action, and which seem to form a tolerably natural group. These are the remedies, the influence of which, on the nervous system, seems to have the power of abating the morbid state of the functions of this system, which are manifested by irregular and convulsive motions, called spasms, or spasmodic motions. We shall therefore place them together, at the end of this chapter, under the head of antispasmodics, and thus placed, they will form an easy introduction to the study of narcotics, and to which they are very nearly related.

As to the mode of action of the other remedies of the same nature, which are not of this number, it will be made evident when we shall treat of the history of each in particular.

A. *Direct Stimulants of the Nervous System.*

Mineral Kingdom.

Phosphorus. *Phosphorus.* A simple body, existing abundantly in nature, in the state of phosphoric acid combined with lime, in certain minerals found in Spain, and in the bones of animals generally. It is also a constituent part of several animal substances, such as the brain and nervous pulp, the roes of fishes, &c.

P. P. It is solid, generally in the form of sticks of the size of a quill, semi-transparent, flexible, easily cut, of a yellowish-white, tasteless, of a peculiar garlic smell, and of a specific gravity of 1.77. It is luminous in the dark, provided it be exposed to the air.

C. P. Although phosphorus has a great affinity for oxygen, still it is without action upon this gas at the common temperature and atmospheric pressure; but, if the temperature is risen, it absorbs it rapidly, and burns with a vivid light, producing very thick white fumes, which are no less than phosphoric acid. By diminishing the atmospheric pressure, it combines with oxygen, but this action operates slowly. Exposed in the air, it acts in the same way, produces white fumes of a garlic smell, and absorbs oxygen by degrees, but combustion becomes instantaneous if the temperature be higher. Heated, it melts at 43° Centig. (110° Fahr.) at a higher temperature it volatilizes. Light reddens it, even when placed in a vacuum. It is insoluble in water, but dissolves in alcohol, ether, and oils. It may combine with a great number of bodies, and forms phosphurets.

Incomp. Subst. Water precipitates it from its alcoholic and ethereal solutions.

Prep. It is obtained by decomposing super-phosphate of lime by charcoal. It is purified by melting it in boiling water, and straining it through a chamois skin, it is then poured into glass moulds.

Th. E. Administered incautiously, phosphorus is a very violent poison, and acts by burning and disorganizing the parts with which it comes in contact. In spite of the dangers which may result from its ingestion, some physicians have ventured so far as to administer it internally, and numerous and well-authenticated observations have proved that it might be exhibited with impunity. It results from these facts that it is a very powerful excitant, the very prompt, but not lasting action of which appears principally to act on the nervous system, and especially on the organs of generation, as Dr. Alphonse Leroy has observed. It

has been exhibited with success in cases of adynamic fevers attended with excessive prostration of strength, in certain paralysis, in obstinate gouty and rheumatic affections, &c. We will remark, with Dr. Sédillot, who has largely experimented upon this remedy, that it can scarcely be given in the form of pills, or incorporated with an electuary, on account of the facility with which it burns during the preparation, and that it is preferable to administer it in solution, principally in a fatty oil. However, it is a very dangerous remedy, the administration of which requires the greatest prudence.

D. & M. of Adm. Gr. ¼ to j. suspended in an emulsion.——*Phosphorated ether*, P. (Phosphorus, 1; sulphuric ether, 50; every ounce contains a little more than 11 grains of phosphorus.) Dose, gut. v. to gut. x. and above, in a mixture. ——*Ether phosphoratus*, Den. (Phosphorus, 1; sulph. ether, 60; every ounce contains 8 grains of phosphorus.) Dose, from gut. x. to gut. xv. and gradually to gut. lxxx.——*Phosphorated oil*, F. M. (Phosphorus, 1; olive or sweet almond oil, 16; essential oil of bergamot, q. s.; every drachm contains gr. iv½. of phosphorus.) Dose, from gut. xx. to gut. xxx. a day in a looch or any mucilaginous menstruum.

Externally. Phosphorated salve, P. (Phosphorus, 4; axungia and water, āā. 50; essential oil of lavender, q. s.) In frictions, but with caution.

Vegetable Kingdom.

Family Apocineæ.

Nux Vomica. *Nux vomica. Strychnos nux vomica*, Lin. A tree growing in the East Indies, and especially at Ceylon and Malabar. P. U. The seeds.

B. C. Trunk of a moderate size, branches opposite; leaves entire, oval, smooth, with short petioles; flowers small, white, in small corymbs at the extremity of the branches; corolla tubular, five-divided; stamina free and distinct; ovary simple, unilocular; fruit ovoid, of the size of an orange, and containing several seeds scattered in an aqueous pulp.

P. P. These seeds are round, flat, pitted on one side, from six to eight lines wide, hard, horn-like, commonly white and semi-transparent internally, sometimes, however, black and opaque; covered over with short and very close hair, which gives them a velvet appearance, of a light brown colour, of a taste extremely bitter and disagreeable.

C. P. According to Pelletier and Caventou, nux vomica contains *strychnia* and *brucia*, combined with a peculiar acid, to which these chemists have given the name of *igasuric*, a yellow colouring matter, a concrete oil, gum, starch, a little wax, some bassorin, and woody fibres. It contains strychnia in the proportion of about $\frac{1}{250}$. Its active principles are very little soluble in water, but they dissolve very easily in alcohol.

Th. E. This substance acts with the greatest energy on the

living body. In the dose of a few grains, it induces very violent spasmodic contractions, producing a real attack of tetanus, but separated at intervals by a flaccidity of the limbs of a shorter or longer duration, and which may be reproduced at pleasure by slightly touching the animal. Should the quantity be more considerable, it produces death, either by asphyxia, by preventing the inspirator muscles from performing their functions, or, as Dr. Segalas thinks, by acting in a peculiar manner upon the nervous system.* Nux vomica seems to act more especially on the spinal marrow, for the division of this organ below the occipital bone, and even decapitation, do not prevent the above-mentioned effects from taking place, and continuing for some time after. The discovery of the peculiar and energetic action of this remedy, on the spinal marrow, has been turned to some advantage in the cure of paralysis, independent of any lesion of the brain; it has also been used in cases of permanent contraction or atrophy of the limbs, in certain cases of amaurosis, &c. It is worthy of remark that the spasmodic contractions produced by this substance, are principally felt in the paralyzed parts.

From what we have just mentioned, it is evident that this remedy is very dangerous, and that its employment requires great care and attention from the physician.

D. & M. of Adm. Powder, seldom, gr. iv. to xij.——*Alcoholic extract*, P. Gr. ½ to iv. a day, in pills, and gradually to xij. and xv.——*Tincture*, P. (Nux vomica, 1; alcohol, 4.)——*Tincture*, F. M. (Alcoholic extract of nux vomica, 3; alcohol, 576. Every ounce contains 3 gr. of extract of nux vomica.) Dose from gut. xx. to xxx. in a mixture, or in frictions upon the paralyzed parts.

Saint Ignatius Bean. *Faba indica* seu *Semen ignatiæ. Strychnos ignatia*, Rich. A tree very nearly related to the preceding, and growing in the Phillipine islands. P. U. The seeds.

B. C. Trunk tolerably elevated; leaves nearly sessile, oval; flowers white, of an agreeable odour, in small clusters in the axilla of the leaves; fruit ovoid, of the shape of a pear, containing from fifteen to twenty grains.

P. P. They are of the size of an olive, round and convex on one side, angular on the other, of a pale brown colour externally, of a greenish-brown internally. Their substance is hard, compact, and horn-like, they are inodorous, and of an excessively bitter taste.

* [We cannot help regretting to see this vague manner of reasoning in therapeutics, by which it is attempted to explain the *modus operandi* of remedies. We confess it is not always an easy matter to explain it physiologically and satisfactorily; but in most instances the explanation attempted amounts to this, that it consists in a *peculiar action;* as if we were any wiser after this very learned elucidation. We do not find fault with authors for not being able to give in all cases a good reason, but rather for their total failure in presenting a rational one, when they make this trial.]—Am. Eds.

C. P. The constituent principles of this article are the same as those of the nux vomica, but in different proportions. It contains $\frac{12}{1000}$ of strychnia, but rather less brucia.

Th. E. The same as that of the preceding substance, but it is rather more energetic. It is somewhat scarce in commerce, and is very little used.

D. & M. of Adm. Powder. gr. ij. to iv.

The Snake Wood, furnished by the *Strychnos colubrina*, Lin. and the Upas Tieute, one of the most violent poisons of the vegetable kingdom, which is likewise produced by a *Strychnos*, growing in Java, are not employed in medicine. Their deleterious properties are owing to the strychnia they contain.

Strychnia. *Strychnia.* A vegetable alkaline substance, discovered by Pelletier and Caventou in the Saint Ignatius bean and nux vomica.

P. P. It is in a white powder, composed of almost microscopic crystals, prismatic, transparent, inodorous, of an excessively bitter taste, and unalterable in the air.

C. P. According to Pelletier and Dumas, strychnia is composed of carbon, 78.22; nitrogen, 8.92; hydrogen, 6.54; and oxygen, 6.38. It is almost insoluble in cold water and ether; it dissolves in 2500 of boiling water, and is very soluble in alcohol and volatile oils; heated below 300° Centig. (572° Fahr.) it does not experience any alteration; at a higher temperature it is decomposed. It possesses alkaline properties, combines, with diluted acids, and forms neutral salts. It acquires with nitric acid a deep red colour, when it contains brucia, which is very often the case, on account of the difficulty of separating them.

Prep. Treat the nux vomica with boiling water, and evaporate to the consistence of a syrup; then add lime, which combines with the igasuric acid, and liberates pure strychnia. It is separated by means of alcohol, and purified by successive crystallizations.

Th. E. The employment of this alkali is similar to that of the substances from which it is extracted; it is only much more energetic. It may be used in the same cases.

D. & M. of Adm. Gr. one-twelfth to one-eighth, in pills.——*Strychnia pills*, F. M. (Strychnia, gr. j.; conserve of cynorrhodon, gr. viij.; for twelve pills.) No. j. to ij. a day.——*Strychnia mixture*, F. M. (Strychnia, gr. j.; acetic acid, gut. ij.; distilled water, ℥ij.;) cochl. min. j. morning and night.——*Tincture*, F. M. (Strychnia, gr. iij.; alcohol, ℥j.;) gut. vi. to xxiv. in a mixture.

Sulphate of Strychnia. *Strychniæ sulphas.* It crystallizes

in small transparent cubes, when it is neutral, and in the shape of needles when a bi-salt. It is unalterable in the air, soluble in ten parts of cold water, and of a very bitter taste. Heated it becomes opaque, melts and forms a mass. At a high temperature it is decomposed. It is composed of strychnia, 90.5; and sulphuric acid, 9.5. It acts more powerfully upon the economy than strychnia itself, on account of its solubility. Dr. Magendie has administered it under several circumstances, and obtained the same results as with strychnia, but he used it rather in smaller doses, for instance, from $\frac{1}{20}$th to $\frac{1}{12}$th of a grain.

The other salts of strychnia are likewise very soluble, and of course they are also very deleterious. They have not as yet been tried.

False Angustura Bark. *Cortex pseudo-angusturæ.* This substance, obtained from South America, is probably yielded by a *strychnos* as yet undescribed, and not by the *Brucea antidysenterica*, by which it was supposed, for a long time, to be produced, and which grows in Abyssinia.

P. P. This bark is in pieces more or less long, rolled, thick, compact, heavy, two or three lines thick, of a reddish-gray colour internally, covered over with an epidermis of a variable, sometimes fungous and rusty appearance. Its odour is weak, somewhat similar to that of ipecacuanha. Its taste is very bitter, lasting, but without any acrimony.

C. P. It contains, according to Pelletier and Caventou, some brucia combined with gallic acid, a fatty matter, some gum, a yellow colouring matter, some lignous fibres, &c. Water and alcohol take up the active principles.

Th. E. This substance acts in the same manner as the nux vomica, and like the other strychnos; but it is less energetic. It is only employed for the preparation of brucia.

Brucia. *Brucia.* Vegetable alkali, discovered by Pelletier and Caventou, in the false angustura bark, nux vomica, and several other *strychnos.*

P. P. This substance is solid, of a pearly white, sometimes crystallizes in regular prisms, sometimes in small scales as boracic acid, inodorous, of a very bitter taste.

C. P. It is composed, according to Pelletier and Dumas, of carbon, 75.04; nitrogen, 7.22; hydrogen, 6.52; and oxygen, 11.21. It dissolves in 850 of cold, and in about 500 of boiling water. It is very soluble in alcohol. It melts at a temperature below 100° Centig. (212° Fahr.) and hardens like wax on cooling. Finally, it turns green the syrup of violets, and forms salts with diluted

acids. Concentrated nitric acid produces with it a fine red colour.

Prep. Brucia is obtained by a process similar to that employed to procure strychnia. In order to purify it, it is requisite to combine it with oxalic acid, and treat the salt thus obtained with alcohol and ether. The oxalate of brucia is then decomposed by magnesia.

Th. E. According to the investigation of Drs. Magendie and Andral, jun. this substance seems to act upon the animal economy in the same manner as strychnia, but with less energy, since six grains of brucia are equivalent to about half a grain of strychnia. But Mr. Chevallier, from unpublished experiments communicated to him, thinks that the therapeutical properties of this substance are very different from those of the nux vomica. However, Drs. Andral and Magendie have exhibited it with advantage in certain cases of palsy, in the atrophy of the extremities, and in several other similar cases.

D. & M. of Adm. Gr. ¼ to vj. gradually.——*Brucia pills*, F. M. (Brucia, gr. xij.; conserve of roses, gr. xxxvj.; for 24 pills.) No. ij. to vj. and above, a day. ——*Brucia mixture*, F. M. (Brucia, gr. vj.; sugar, ʒij.; mint water, ℥ij.;) cochl. ij. to iv. a day.——*Tincture*, F. M. (Brucia, 1; alcohol, 32.) Dose, from gut. vj. to xxiv. in a suitable menstruum.

The salts of brucia are very soluble in water, and consequently more active than this base itself. They have not as yet been administered. Dr. Magendie is of opinion that the sulphate and muriate might be employed.

The Sulphate of Brucia crystallizes in long prismatic needles, very soluble in water, and of a very bitter taste. It is composed of sulphuric acid, 8.84, and brucia, 91.16.

The Hydro-chlorate of Brucia crystallizes in four-sided prisms, unalterable in the air. It is composed of hydro-chloric acid, 5.95, and brucia, 94.04.

Family Synantherеæ.

Arnica. *Arnicæ flores et radix. Arnica montana*, Lin. A perennial plant growing in the Vosges, Alps, Pyrenees, &c., and flowering in the month of July. P. U. The flowers and root.

B. C. Stem simple, pubescent, one foot high; leaves sessile, oval, entire, of a light green colour underneath, aggregated at the base of the stem; flowers large, of a lively yellow colour; involucrum spreading; florets of the disk regular and hermaphrodite; semi-florets of the circumference large and female; fruits elongate, surmounted by a plumose pappus.

P. P. The desiccated flowers, such as they are received from Germany, present at their circumference, semi-florets of a golden yellow, and in their centre some black seeds surmounted by a gray pappus. Their taste is bitter, acrid and nauseous, and their strong and aromatic smell, provokes sneezing. The root, scarcely ever used, is slender, fibrous, blackish externally, white internally, of an odour and taste similar to those of the flowers.

C. P. According to Lassaigne and Chevallier, the arnica flowers contain an odorous resin, a nauseous bitter matter, similar to *cytisin*, some gallic acid, a yellow colouring matter, albumen, gum, and finally salts with base of potassa and lime. Water and alcohol dissolve their active properties.

Incomp. Subst. Sulphates of iron and zinc, acetate of lead and mineral acids.

Th. E. The first effect resulting from the ingestion of this remedy is an irritation of the digestive canal, characterized by a sensation of heaviness at the epigastric region, nausea and sometimes vomiting, colics and even alvine evacuations; but if the patient continues to employ this plant in moderate doses, these phenomena are only transient, and disappear in a short time; indeed, the organs seem to be easily habituated to its action. The secondary effects are felt by the brain and by the whole nervous system. It manifests itself by a cephalalgia more or less violent, spasmodic motions, pricking in the limbs, and a sort of permanent contraction of the respiratory muscles. It is evident that this remedy is a very energetic stimulant, and may be exhibited with advantage in a great number of cases.

It is used commonly in chronic rheumatism, palsies, amaurosis, and in a word, as a stimulant of the brain. It has been recommended as a febrifuge; but, although it sometimes succeeds, it cannot in any way, be a substitute for bark. Finally, it has been advised in fevers of an adynamic or ataxic nature. This substance is very much used by Germany practitioners. It is commonly considered as a sure remedy against accidents resulting from blows on the head and of every description, but from what we have already said of its mode of action, we may easily perceive, that in most cases, it must be more hurtful than advantageous. The powder of the flowers acts as a violent sternutatory.

D. & M. of Adm. Pulverized flowers, gr. vi. to x. and even ʒss. gradually. Decoction and infusion, from ʒiv. to ʒj. to ℔ij. of water.——*Extractum arnicæ*, Pol., Pr., A. gr. x. to ℈j.——*Tinctura arnicæ*, Pol. (Arnica 1; alcohol, 24.) ʒss. to ʒj., in a proper menstruum. Root, powder, gr. xij. to ʒj. Decoction, same doses as the flowers.

Family Viniferæ.

Wine. Vinum. An alcoholic liquor resulting from the fermentation of the juice of the grape, a fruit produced by the *Vitis vinifera*, Lin. A sarmentose shrub, native of Asia and generally cultivated in almost every country.

B. C. Stem and leaves known by every body; flowers small, greenish, in clusters opposite to the leaves; calix five-toothed, very small; corolla, five green petals; five stamina; fruit, berries of various colours, containing from one to four seeds.

P. P. Wine differs very much, according to the nature of the grape from which it is extracted, and the manner in which it has been made. Thus, wines are red when black grape with its skin have been used, and of more or less yellowish-white colour, when the white grape, or even when the black grape, freed of its skin has been employed. Their odour and savour vary also very much and are in no relation with the quantity of alcohol they contain. The Burgundy wine, for instance, contains scarcely any more alcohol than that of Surenne, and is, however, of a very different quality. The wines of southern regions, are generally, the most highly flavoured. Those of cold climates, on the contrary, are harsh, and even frequently very acid.

Wines, with respect to their properties, may be divided into three principal divisions, that is, 1st. The *astringent*, or *dry wines*, such are those of Alicant, Bordeaux, Burgundy, Sherry, Madeira, &c. These wines contain a small quantity of tannin, which gives them a taste more or less harsh. 2d. The *sweet wines*, such are Malaga, Rota, Rivesaltes, Lunel, &c. containing a tolerably large quantity of sugar, which has escaped fermentation, and 3d. The *foaming* or *sparkling wines*, such as Champagne, which being bottled up before they have undergone a perfect fermentation, contain a large quantity of carbonic acid gas in solution.

C. P. All the wines give on analysis very nearly the same products, viz: water, alcohol, a little mucilage, colouring principles, supertartrate of potassa, tartrate of lime, acetic acid, and some of them contain besides, carbonic acid; finally, a very volatile principle which has not as yet been isolated, and to which the peculiar flavour or *bouquet* of the wine has been attributed. It is to the presence of alcohol, they are principally indebted for their stimulant and diffusible properties, and this principle, which may be separated by distillation, exists in them in very different proportions, as may be perceived by the following table, for which we are indebted to Mr. Brande. [After this able chemist we have also added the malt and spirituous liquors, &c. since they are daily used in convalescence, &c. in this country.]

Names of the Wines, Malt, and Spirituous Liquors, and the Proportion of Alcohol, (specific gravity 0.825,) in one hundred parts of these Liquids by measure.

Lissa (average)	25.41	Champagne (still)	13.80
Marsala (average)	25.09	Do. (sparkling)	12.61
Port (average)	23.39	Red Hermitage	12.32
Madeira, and red or Burgundy Madeira (average)	22.27	Vin de Grave	13.37
Xeres or Sherry (average)	19.17	Frontignac	12.89
Teneriffe	19.79	Côte rôtie	12.32
Lachryma-christi	19.70	Rhenish wine (average)	12.08
Constancia (white)	19.75	Tokay	9.88
Ditto (red)	18.92	Gooseberry wine	11.84
Lisbon	18.94	Cider (highest average)	9.87
Cape Muscat	18.25	Ditto (lowest ditto)	5.21
Roussillon (average)	18.13	Mead	7.32
Malaga	17.26	Ale (average)	6.87
Hermitage (white)	17.43	Brown stout	6.80
Malmsey Madeira	16.40	Porter (average)	4.20
Lunel	15.52	Small beer	1.28
Bordeaux wine or claret (average)	15.10	Brandy	53.39
Sauterne	14.22	Rum	53.68
Burgundy (average)	14.57	Gin	51.60
Nice	14.63	Whiskey	54.32
		Irish ditto	53.90

Th. E. The action of wines upon the animal economy depends principally upon the quantity of alcohol they contain. However, a certain given quantity of wine does not act in the same way as a mixture of alcohol and water, in the same proportions; and certain wines yielding on distillation very nearly the same proportion of alcohol, do not inebriate with the same facility. This difference must be ascribed to the various kinds of combinations in which alcohol exists in these complex products. However, all these phenomena are too generally known to require in this work any further description. We will simply state that astringent wines act as tonics and stimulants, and that the sparkling wines, which act so promptly and so powerfully on the brain, notwithstanding the small proportion of alcohol they contain, exercise likewise a very decided diuretic influence.

The cases, in which wine is employed as a remedy, are very numerous. It is administered with success in certain cases of adynamic and ataxic fevers, in scorbutic and scrofulous affections; finally, in all the asthenic diseases; whilst its use is contra-indicated in all acute phlegmasiæ. It is besides a menstruum for a great many remedies, and enters into the composition of a great number of officinal preparations.

Alcohol. *Alcohol.* Is one of the products of vinous fermentation. It exists, already formed, in variable quantities, in the liquids which have undergone this process.

P. P. Pure alcohol is liquid, transparent, colourless, very vo-

latile, of a warm taste, of a penetrating and agreeable smell *sui generis*, and of a specific gravity of 0.792.

C. P. The elements of alcohol may be represented by an equal volume of bi-carburetted hydrogen or olefiant gas, and steam of water. Exposed to the air, this liquid evaporates promptly, and even attracts the moisture of the atmosphere. The mixture of both these liquids is accompanied by an increase of temperature, and induces changes in the density of alcohol. Thus, the specific gravity of 92 of alcohol and 8 of water, is 0.815; that of 99 of water and 1 of alcohol, is of 0.999, &c. In order to determine the proportion of alcohol, they generally use in France Baumé's areometer, the 10° of which corresponds with distilled water, and the 40° with alcohol containing 8 only of water in 100 parts. The alcohol of the shops is from 32° to 35°; and brandy, which contains generally about equal parts of alcohol and water, marks from 18° to 22°.

Alcohol boils at 78° Centig. (172° Fahr.) and volatilizes rapidly without being decomposed. The density of this vapour is 1613; it inflames easily by the contact of an ignited body, and burns with a spreading and bluish-white flame, without leaving any residue. The most intense artificial cold has never been able to solidify it; for Hutton's experiments, in which he pretends having congealed it by a cold of 79° Centig., are extremely doubtful. Most of the mineral acids transform it into ether. It dissolves phosphorus, sulphur, iodine, mineral and vegetable alkalies, and deliquescent salts. All the other metallic oxides, the salts insoluble in water, and the efflorescent salts, on the contrary, do not dissolve in it. Resins, oils, balsams, soaps, &c. are in general easily taken up by this liquid.

Prep. Alcohol is obtained on a large scale, by distilling, in an alembic, the different fermented liquors, which contain it. The product of the first distillation is an alcohol diluted with a large quantity of water. Its odour and taste vary according to the liquors from which it has been obtained, and it receives acccordingly different names, such as *brandy* when distilled from wine; *Taffia*, *Rhum*, when it is furnished by the juice of the sugar cane, *rack* when distilled from rice, &c. In order to purify and separate it from water, in a word to rectify it, it is re-distilled several times, by mixing with it substances possessing a greater affinity for water, such as sub-carbonate of potassa, chloride of sodium, &c. and by separating the products.

Th. E. Alcohol is one of the most energetic diffusible stimulants. Concentrated it acts as a violent poison; diluted and taken in small quantities, it produces a more or less lively heat about the epigastric region, an irritation of the nervous system, the ac-

celeration of circulation, in a word, a general excitation. In larger quantities, it produces inebriation characterized with profound coma, inflammation of the stomach, &c. It is even capable of producing death. Alcohol of 36°, or *rectified spirit of wine*, is used to prepare elixirs, tinctures, and it seems to increase the action of a great number of medicinal substances. It is never employed alone in practice; but in the state of brandy, &c. it is daily used as a table drink, and as a tonic and a stimulant, in diseases attended with adynamic symptoms, typhus, in the convalescence of serious diseases, delirium, tremors, &c. Externally it is used as a rubefacient, and diluted with water, as a tonic astringent and refringerant under numerous circumstances.

D. & M. of Adm. ʒj. to ʒij., diluted as a drink.——*Mild punch*, Paris H. (Brandy and gum water, āā. ʒij.; alcohol of balm, ʒij.; simple syrup, ʒj.) cochl. j. or ij. every two or three hours.

B. *Antispasmodics.*

The antispasmodics (ἀντὶ, against, and σπασμὸς, spasm,) are stimulant remedies which exercise on the nervous system a peculiar influence, having a tendency to soothe the disorders of its functions, and calm irregular muscular contractions, called spasmodic motions. In general, their effects are promptly manifested, and are so much the more marked as the patient is in a greater state of weakness and irritability; but they are of a short duration and their action is soon blunted by habit. They appear to excite powerfully the nervous system, at the same time that they regulate, as it were, its action; they sooth pain, and calm agitation, without producing that state of drowsiness which characterizes the narcotic medication; they diminish the convulsive motions of the muscles, when, however, they are not produced by inflammation of the cerebral system. Thus we see, that under this point of view, antispasmodics differ essentially from the other stimulant remedies. Ether for instance, acts with the same promptitude as alcohol, and for this reason, it has received as well as the latter, the denomination of diffusible stimulant; but instead of occasioning convulsive motions as alcohol does, it has rather a tendency to calm them, and may even be used with advantage in convulsive tremor attendant on inebriation.

Most of the remedies of this kind, are remarkable for their smell and the great volatility of their active principles; but their nature varies considerably. They are commonly exhibited in cases of intermittent and chronic convulsions, and other nervous symptoms, as we shall mention in the particular history of each of these articles; but like all the excitants, their employment is injurious whenever an inflammation exists in any of the important organs.

Ethers are compounds resulting invariably from the action of acids upon alcohol. M. Thénard divides them into three distinct classes, viz.:

1. Those composed of hydrogen, oxygen and carbon, and in the formation of which there does not exist the least quantity of the acid employed, which acid acts only by depriving the alcohol of a part of its hydrogen.

2. Those containing bi-carburetted hydrogen combined with the acid employed.

And 3. Those resulting from the intimate combination of the acid with the alcohol.

Sulphuric or Hydratic Ether. *Æther sulphuricus* seu *vitriolicus.* It results from the action of a concentrated acid having a great affinity for water, and not easily volatilized, on alcohol; such as sulphuric, phosphoric, arsenic and fluo-boracic acids.

P. P. The hydratic ether is liquid, colourless, limpid, extremely volatile, of a strong, peculiar and agreeable smell, of a warm and sharp taste, and of a specific gravity of 711.

C. P. According to Mr. Gay-Lussac, its elements may be represented by two of bi-carburetted hydrogen, and one of vapour of water, by volume; from hence it results that in order to transform alcohol into ether, it is necessary to deprive it of one-half of its hydrogen and oxygen in the proportions requisite to form water. It volatilizes at the common temperature, by producing an intense degree of cold; the density of its vapour is 2.586. Under the pressure of 0.76 centimetres (29¾ inches) it boils at 35° Centig. (95° Fahr.) It burns easily with a wide spreading white flame, and is decomposed at a red heat. It dissolves in ten parts of water, and unites in every proportion with alcohol and ammonia, from which it is separated by water; finally, it dissolves a great number of vegetable matters and some animal substances.

P. P. Mix, by degrees, equal parts of alcohol and concentrated sulphuric acid in a retort, and warm the mixture; the ether volatilizes and condenses in a receiver kept cold by means of ice. It is rectified by agitation with caustic potassa, which takes up the alcohol, and by distilling it with a gentle heat after having mixed with it chloride of calcium.

Th. E. Sulphuric ether, taken internally in large doses, irritates the stomach powerfully, and produces, at the same time, giddiness, flashes of light, a sort of intoxication, not so lasting, however, as that resulting from alcohol. In small doses, this substance causes a sensation of heat, which, from the stomach, extends rapidly to the whole body. Its action is then spent on the nervous system, the vitality of which it modifies powerfully,

sometimes by acting upon it as a sedative, at other times by stimulating it with great energy; but always in a transient manner. In no case does it seem to have any influence upon the circulatory system. It is exhibited with advantage in most of the nervous affections, such as spasmodic vomiting, nervous colics, hysteria, asthma, and generally all the neuroses. Ether is often employed in cases of intoxication, which it relieves as by an enchantment. It is exhibited with decided advantage in typhoid fevers, in order to calm the convulsive motions, hiccough, &c. It has also been recommended as a febrifuge and an anthelmintic. Administered in enema, it often proves useful in nephretic colic. The vapour which disengages incessantly from it is employed to irritate the pituitary surface in cases of syncope, and may be useful in certain nervous affections of the organs of respiration. Externally, ether is used as a refrigerant to oppose certain neuralgiæ, head-achs, &c. Finally, this liquid is employed as a solvent of a great number of remedies.

D. & M. of Adm. Gut. vi. to x. on sugar, or from gut. xx. to xxx. in a mixture. ——*Antispasmodic mixture*, P. (Sulphuric ether, ʒj.; linden tree flower and orange flower waters, āā. ℥ij.; syrup, ℥j.) Dose, a table-spoonful.——*Spiritus ætheris sulphurici*, U. S., L., E., F. (Sulphuric ether, 1 part; alcohol, 2 parts. ——*Spiritus ætheris sulphurici compositus*, or *Hoffmann's anodyne liquor*, U. S., L., P. (Spirit of sulphuric ether, 1 pint; ethereal oil, f.ʒij.)——*Spiritus sulphurico-æthereus*, Pr., Pol. (Ether, 1; alcohol, 3 parts.)—Den. (Ether, 1; alcohol, 6.) Dose, from gut. xv. to xxx. in a mixture.——*Syrupus ætheris sulphurici*, P. (Ether, 3; distilled water, 32; sugar, 64.) Dose, from ℥ss. to ℥j.

Hydro-chloric Ether. *Æther hydro-chloricus* seu *muriaticus*, belongs to the second class of ethers. It results from the action of the hydro-chloric acid on alcohol.

P. P. It is liquid below 11° Centig. (50° Fahr.) and gaseous above this temperature, colourless, of a strong smell analogous to that of sulphuric ether, of a sweetish taste. Its specific gravity, in the gaseous state, is 2.219, that of the atmospheric air being 1000; and in the liquid state, at 5° Centig. (41° Fahr.) under the pressure of 76 centimetres, (29¾ inches,) its specific gravity is of 0.874.

C. P. It is composed of one volume of hydro-chloric gas and two volumes of hydrogen condensed in one. Poured upon the hand, it boils, vaporates instantly, and produces a very great degree of cold. It inflames rapidly by contact with an ignited body, and burns with a green flame. Heated to dark red heat, it is decomposed. It is dissolved in its volume of water at 18° Centig. (64° Fahr.) and in every proportion in alcohol. It has no action on litmus.

Incomp. Subst. Water separates it from its alcoholic solution.

Prep. It is obtained by warming, in a retort, a mixture of

equal parts of alcohol and liquid concentrated hydro-chloric acid.

Th. E. It is but little used on account of its great volatility. Its action is nearly similar to that of sulphuric ether.

D. & M. of Adm. The same as for sulphuric ether.——*Alcoholic hydro-chloric ether*, P. (Hydro-chloric ether and alcohol, equal parts.) Dose, from gut. xx. to ʒss. in a mixture.

Nitric, or rather Nitrous Ether. *Æther nitricus.* It results from the combination of nitrous acid with alcohol, and ranks amongst the ethers of the third class.

P. P. It is liquid, of a yellowish-white, very volatile, of a smell similar to that of sulphuric ether, but much stronger, and analogous to that of the pippin apple; of an acrid and burning taste, of a greater specific gravity than alcohol, but less than water.

C. P. According to M. Thénard, this ether is formed of alcohol and nitrous acid, in proportions as yet unknown; and besides, it always contains a small quantity of acetic acid. It boils at 21° Centig. (60° Fahr.) and is instantly reduced to vapours. It inflames easily, and burns with a very vivid flame. Heated, it is decomposed. Agitated with water, it separates into three parts; the first volatilizes, the second is dissolved, and the third is decomposed by producing nitrous acid. Abandoned to itself, it is soon altered, and becomes acid. It unites easily with alcohol.

Prep. It is obtained by distilling equal parts, by weight, of alcohol and nitric acid.*

Th. E. It acts nearly in the same way as sulphuric ether; but it is much more volatile; its application on the surface of a body produces a more intense cold. It seems to possess some diuretic properties. It has been exhibited with success in certain diseases of the liver. It is seldomer employed than sulphuric ether.

D. & M. of Adm. The same as with sulphuric ether.——*Spiritus ætheris nitrici*, P. (Nitric ether, and alcohol, equal parts.) Dose, from gut. x. to gut. xx. in a mixture.

[Spirit of Nitrous Ether. *Spiritus ætheris nitrosi*, Sweet spirit of nitre, U. S., L., E., is a colourless liquid, very fragrant, and of a pungent acidulous taste. Its specific gravity should not exceed 0.834. It is very volatile, inflammable; and soluble in water and in alcohol. It coagulates the tincture of guaiacum, discolouring it at the same time to a deep blue; and it strikes also a deep olive with the solution of the sulphate of iron. The proportion of nitrous ether in this spirit has not yet been determined.

* [Professor Hare has published, in the third number of the American Journal of the Medical Sciences, a process for the preparation of this ether.]—Am. Eds.

Prep. Mix gradually together three ounces of nitric acid and two pints of alcohol, taking care that the heat during the mixture does not exceed 120° Fahr. Then, by means of a gentle heat, distil twenty-four fluid ounces.

Th. E. It has long been employed under the title of *sweet spirit of nitre*, as a grateful refrigerent, and to quench thirst in febrile affections; for which purpose the dose is from ℥xx. to ℥xl., given in a cupful of water, or any other appropriate vehicle. In larger doses it acts as a gentle stimulant to the stomach, relieving nausea and flatulence; and acts also on the kidneys, increasing the flow of urine; on which account it is advantageously prescribed as an auxiliary to other diuretics in dropsical complaints.]

Acetic Ether. *Æther aceticus.* It belongs to the third class, and results from the combination of acetic acid with alcohol.

P. P. It is a colourless liquid, of an ethereal and agreeable smell, of a peculiar taste, and of the specific gravity of 0.866.

C. P. According to Thomson, it is composed of four atoms of per-carburetted hydrogen, and one atom of acetic acid. It boils at 71° Centig. (160° Fahr.) burns with a long yellowish flame, it unites in all proportions with alcohol, and dissolves in about seven parts of water without undergoing decomposition. It is decomposed by potassa, and is not altered by age.

Prep. It is prepared by heating, in a retort, a mixture of 100 of alcohol, 63 of concentrated acetic acid, and 17 of sulphuric acid at 66°.

Th. E. It possesses the same properties as the other ethers, but it is much less volatile. For this reason it is often preferred for external applications. Dr. Sédillot has used it with great advantage in frictions upon parts affected with rheumatic and neuralgic pains.

D. & M. of Adm. The same as with sulphuric ether. Externally, in frictions, ʒij. to ʒiv., according to Dr. Sédillot's method.

Family Guttiferæ.

Camphor. *Camphora.* A proximate principle, contained in a great number of plants; but obtained principally from the *Dryobalanops camphora*, Colebroke, a large tree, native of the forests on the north-western coast of Sumatra; and from the *Laurus camphora*, Lin., a tree growing in China and Japan.

B. C. *Dryobalanops.* Trunk large, often six or seven feet in diameter; leaves opposite below, and alternate above, elliptical, obtusely acuminate, or rather beaked, parallel-veined, entire, supported on short petioles, with subulate, ca-

ducous stipules in pairs; calix, one-leafed, permanent, enlarged into a gibbous cup, with five ligulate, long, scariose wings; corolla, five-parted; fruit, a persistent capsule, superior, ovate, woody, fibrous, longitudinally furrowed, one-celled, and three-valved, with a solitary seed, possessing a strong terebinthinate fragrance.

Laurus camphora. Family Laurineæ. Trunk straight, tolerably high; leaves alternate, oval, shining on the superior surface, glaucous on the inferior one; flowers in corymbs, supported on long peduncles; fruit, similar to that of the cinnamon tree, but smaller.

P. P. Camphor is solid, white, transparent, very volatile, brittle; commonly in the form of round pieces, convex on one side, slightly concave on the other, of a crystalline texture, and shining fracture, not easily pulverized, tenacious between the teeth, of a strong smell, *sui generis*, of an acrid taste, followed by a sensation of cold. Its specific gravity is 0.988.

C. P. It is composed of carbon, 74.38; hydrogen, 10.67; and oxygen, 14.61; it inflames easily, and burns with a good deal of smoke without leaving any residue. Heated, it melts at 175° Centig. (347° Fahr.,) boils at 204° Centig. (400° Fahr.,) and is easily reduced to vapours, even at the common temperature. Alcohol dissolves three-fourths of its weight; it is very soluble in ether, in fixed and volatile oils; but water dissolves only a small quantity, and precipitates it from its alcoholic solutions. Treated, *viâ callidâ*, with nitric acid, it gives camphoric acid, and with sulphuric acid, it changes, partly, into artificial tannin.

Prep. Dr. Thomson remarks, that the greatest part of the camphor brought to Europe, that is, the Sumatra camphor, is the product of the *Dryobalanops*. It forms in the heart of the tree, occupying spaces of a foot, and a foot and a half long, at certain distances: but the younger trees yield oil only, which has nearly the same properties as the camphor, and would ultimately be converted into the concrete substance. The natives, in searching for camphor, make a deep incision in the trunk with an axe, about fourteen or eighteen feet from the ground; and when it is discovered they fell the tree, and cut it into junks of a fathom long, which are again split. The camphor is found in perpendicular layers, and in a concrete state, resembling whitish flakes, occupying a space the thickness of a man's arm. A tree of a moderate size yield nearly eleven pounds, and a large tree double this quantity. The camphor furnished by the Laurus camphora is obtained by heating in close vessels, with a certain quantity of water, the wood and root of the tree. The vapour of the water carries off the camphor, which condenses in the superior part of the apparatus, under the form of a gray powder. It is purified by subliming it in glass or iron vessels, after being mixed with one-twentieth of its weight of quicklime.

Th. E. The local action of camphor is weak, and of an irri-

tating nature. Its general action is difficult to explain, and varies considerably according to the doses and individuals to whom it is administered; it is, however, upon the nervous system it exercises its principal influence. Administered in small doses, it does not increase the rapidity of the pulse, unless it be the consequence of its local action upon an inflamed surface; it soothes pain, induces sleep, diminishes the spasmodic motions; in a word, it seems to act as a sedative. In large doses, it becomes a very energetic stimulant, and causes dizziness, syncope, and convulsions, attended with paleness of the face, and chills; it diminishes the frequency of the pulse; indeed, it may even sometimes produce death. This remedy is employed externally, and frequently with success, in nervous and spasmodic affections, such as neuralgic pains, spasm of the bladder, and of the œsophagus, in hysteria, chorea or St. Guy's dance, &c. It has often been administered in typhoid fevers to abate the nervous symptoms, and principally delirium, subsultus tendinum, &c. It has been recommended as an anti-aphrodisiac.

Externally it is employed with the greatest advantage in rheumatic affections, gout, neuralgia, &c. It is one of the remedies most commonly used.

D. & M. of Adm. *Internally.* Gr. ij. to ℈j. and even ʒss. to ʒj. a day, in pills, or suspended in a mixture by means of a mucilage or the yolk of an egg.——*Pilulæ opii camphoratæ*, New York H. (Opium, ʒij.; pulverized camphor, ʒss.; mucilage of gum Arabic, q. s.) For pills, No. cxx.)——*-Camphorated bolus*, Paris H. (Camphor and nitrate of potassa, āā. gr. xij.; starch and simple syrup, q. s. for a bolus.) Dose, from No. 4 to 10 a day.——*Bolus camphoræ*, Guy's H. (Camphor and conserve of roses, āā. gr. vj.) Dose, one every 4 or 6 hours.——*Sedative pills.* Paris H. (Camphor, gr. ij.; calomel, gr. j.; simple syrup, q. s.) For one pill.——*Anti-spasmodic pills*, Paris H. (Camphor, gr. vj.; nitrate of potassa, gr. iv.; opium, gr. j.; simple syrup, q. s. for 2 pills.) Dose, from No. 2 to 3 a day.——*Mistura camphorata*, U. S. (Camphor, ʒss.; alcohol. ♏x.; sugar, ʒss.; water, Oj.)—L. (The same as the preceding, but without sugar.)—D., Pr., (Camphor, ℈j.; alcohol, gut. x.; sugar, ʒss.; water, Oj.)—P. (Camphor, 2; infusion of serpentaria, 576; syrup of bark and liquid acetate of ammonia, āā. 144; tincture of bark, 36.) Dose, a table-spoonful every two hours——*Emulsio camphoræ*, E. (Camphor, ℈j. blanched sweet almond, and refined sugar, āā. ʒss.; water, Ojss.) In doses of two ounces—P. (Simple emulsion, 96; camphor, gr. vj.) Dose, a table-spoonful.——*Haustus camphoræ*, Guy's H. (Camphor, gr. vj.; sugar, ʒj.; mucilage of gum Arabic, ʒiij.; water, ʒjss.) To take at once, every four or six hous.

Externally. Camphorated enema, Paris H. (Camphor, ʒij.; yolk of eggs, q. s.; decoction of flaxseed, Ibij.)——*Tinctura camphoræ*, U. S. (Camphor, ʒj.; diluted alcohol, Oj.)—E. (Camphor, ʒj.; rectified alcohol, Ibj.)——*Spiritus camphoræ*, L., D. (Camphor, ʒiv.; rectified spirit, Oij.)—P. (Camphor, 1; alcohol, 50.) Sometimes used internally, in doses of from gut. xx. to xxx.——*Spiritus camphoratus*, Pr., Pol., Den. (Camphor, 1; alcohol, 6.)——*Resolvent lotion*, Paris H. (Spirit of camphor, ʒviij.; infusion of elder flowers, Ibj.)——*Acidum aceticum camphoratum*, D., E. (Camphor, ʒss.; alcohol, q. s. to dissolve the camphor; acetic acid, ʒvj.) Let the vapour be breathed in cases of syncope.——*Linimentum camphoratum*, U. S., P. (Camphor, ʒss.; olive oil, f.ʒiv.)—L., D., E., Den. (Camphor, ʒss.; olive oil, ʒij.)——*Linimentum camphoræ*

compositum, L. (Camphor, ℥ij.; solution of ammonia, f.℥vj.; spirit of lavender, Oj.)——*Linimentum saponis camphoratum*, U. S. (Castile soap, ℥iij.; camphor, ℥ss.; oil of rosemary, f.℥ss.; alcohol, Oij.)——*Opodeldoc*, P., Pr. (Camphor, 12; beef marrow-soap, and distilled water of thyme, āā. 32; alcohol, 188; essential oil of rosemary, 3; essential oil of thyme, 1; liquid ammonia, 4.)——*Linimentum saponis camphoratum*, F. (Camphor, 1; white soap, 4; compound alcohol of John's wort, 24.)——*Resolvent liniment*, Paris H. (Camphor, ℥ij.; white oil, ℥ij.; lime water, ℥ss.)

Family Umbelliferæ.

Assafœtida. *Gummi resina assafœtidæ.* Gummo-resinous juice furnished by the *Ferula assafœtida*, Lin. a perennial plant growing in Persia.

B. C. Root similar to that of the parsnip, black externally, white internally, lactescent, fetid; stem naked, cylindrical, five or six feet high; leaves all radical, triternate, of a light green, supported by a peduncle six to eight inches long, of the size of the finger; flowers of a pale yellow colour, in umbels of from twelve to twenty rays; involucrum caducous; involucellum polyphyllous; flowers elliptical, compressed, of a reddish-brown colour.

P. P. This substance is in agglutinated masses more or less voluminous, of a brown or fallow colour, intermixed with white or violet points; becoming easily soft with a gentle heat; of a penetrating smell and remarkable for its fetidity; of an acrid, bitter, and sharp taste. Its specific gravity is 1.52.

C. P. According to Mr. Pelletier, it is composed of resin, 66; volatile oil, 3.60; gum, 19.44; bassorin, 11.66; super-malate of lime, 0.30. It is soluble in alcohol, ether, vinegar, the yolk of eggs, and partly only in water; triturated with this menstruum, it forms a sort of permanent emulsion; with $\frac{1}{12}$th of camphor, it produces a plastic mass, and is easily reduced to powder with carbonate of ammonia, without undergoing any alteration in its nature.

Th. E. Assafœtida is a very active stimulant; its influence seems to be principally spent on the nervous system. Administered in large doses, it produces a sensation of heat in the epigastrium, vomiting and alvine evacuations, attended with general uneasiness, agitation, and anxiety. In small doses it assists the functions of the stomach, and its secondary action only is felt by the nervous system, upon which it acts most commonly in the same manner as antispasmodics generally. It is very frequently and successfully exhibited in hysteria, hypochondria, nervous colics, asthma, hooping-cough and other nervous affections. It has been recommended as an emmenagogue and an anthelmintic. Indeed it has proved very successful in certain amenorrhœæ, and affections dependent upon the presence of worms. Externally, it is employed as a powerful resolvent in cases of indolent tumours, of caries of the bones, &c.

D. & M. of Adm. Gr. x. to ʒss. in pills, or suspended in an emulsion.——*Pilulæ assafœtidæ*, U. S. (Assafœtida, 3 parts; castile soap, 1 part.)—B. (Assafœtida and honey, āā. equal parts.) Dose, from 12 to 20 grains.——*Pilulæ assafœtidæ compositæ*, U. S.——*Pilulæ aloes et assafœtidæ*, E. (Assafœtida, aloes, and soap, āā. equal parts.)——*Pilulæ fœtidæ*, F., Dén. (Assafœtida and castoreum, āā. 9; camphor, 3; Dippel's animal oil, 1; tincture of myrrh, q. s.) Dose, gr. vj. to xij.——*Pilulæ assafœtidæ*, New York H. (Assafœtida, ʒj.; camphor, ʒj.; Spanish soap, ʒss.)——*Anti-spasmodic pills*, Paris H. (Assafœtida, gr. ij.; musk, gr. ss.) Dose, from No. 2 to 4 a day.——*Pilulæ assafœtidæ compositæ*, Guy's H. (Assafœtida, gr. x.; ipecacuanha and squill, āā. gr. j.; water, q. s. for three pills.)——*Mistura assafœtidæ*, L. (Assafœtida, ʒij.; water, Oss.)——*Lac assafœtidæ*, D. (Assafœtida, ʒij.; pennyroyal water, f.ʒviij.)——*Mistura assafœtidæ Millari*, B. (Assafœtida, 1; liquid acetate of ammonia, 4; pennyroyal water, 12.) Dose, a table-spoonful every two hours.——*Tinctura assafœtidæ*, U. S., L., D., E., P. (Assafœtida, 1 part; alcohol, 8 parts.)—Pol., F., Pr., Den., B. (Assafœtida, 1; alcohol, 6.) Dose, from ℈j. to ʒij. and above.——*Spiritus ammoniæ fœtidus*, L. (Spirit of ammonia, Oij.; assafœtida, ʒij.)—D. (Assafœtida, ʒx.)——*Tinctura assafœtidæ ammoniata*, E. (Ammoniated alcohol, ʒviij.; assafœtida, ʒss.)——*Æther assafœtidæ*, P. (Assafœtida, 1; sulphuric ether, 4.) Dose, from gut. xx. to xxx.——*Enema assafœtidæ*, New York H. (Tincture of assafœtida, ʒij. decoction of flaxseed, f.ʒvj.)—Paris H. (Assafœtida, ʒj.; yolk of eggs, No. 1; water, ʒvj.)—Guy's H. (Assafœtida, ʒij.; decoction of oats, ʒx.)——*Emplastrum assafœtidæ*, U. S., E. (Lead plaster and assafœtida, āā. 2 parts; galbanum and yellow wax, āā. 1 part.)——*Emplastrum fœtidum*, Pr., Pol. (Assafœtida, 4; gum ammoniac, 12; soap, 2; axungia, 1.)—F. (Assafœtida and galbanum, āā. 4; wax, 8; olive oil, 2; colophony, 1.)

Gum Ammoniac. *Gummi-resina ammoniacum.* Inspissated juice which seems to be furnished by the *Heracleum gummiferum*, Wild. a plant nearly related to the preceding, and native of Africa and of the East Indies.

B. C. Root perpendicular, fleshy, white; stem two or three feet high, ramose, branches opposite; radical leaves tri-lobed, dentated, cordate, pubescent underneath, and supported by a canaliculate petiole; umbels large and composed of numerous umbellets; fruit oblong, formed by two striated seeds close to each other.

P. P. This substance is in white or yellowish tears, or in masses of various sizes, formed of agglomerated tears, intermixed with seeds, of a slightly bitter and nauseous taste, of a weak but unpleasant smell. Its specific gravity is 1.207.

C. P. According to Mr. Braconnot, it is composed of gum, 18.4; resin, 70; glutinous matter insoluble in water and alcohol, 4.4; and water, 6. It becomes soft by heat, but it does not melt; it is partly soluble in water, alcohol, ether, and vinegar.

Th. E. Gum ammoniac possesses very energetic stimulant properties; its action is very nearly similar to that of assafœtida, and its principal influence is also felt by the nervous system. It is employed as a stimulant and an antispasmodic in asthma, and in cases of neurosis, involving respiration and digestion, in hysteric affections, chlorosis, &c. As an expectorant it is administered in chronic pulmonary catarrhs, and other old affections of the

lungs. It is likewise exhibited with advantage in certain cases of obstructions of the abdominal viscera, &c. Finally, applied externally, it proves very useful in the treatment of tumours unattended with inflammation, and white swelling of the articulations, scirrhus, &c. It enters into the composition of several plasters.

D. & M. of Adm. *Internally.* Gr. x. to ʒss. in pills, or suspended in a mixture by means of the yolk of eggs.——*Pilulæ resolvens,* Den. (Gum ammoniac, medicinal soap, and extract of cicuta, āā. equal parts.)——*Resolvent pill,* Paris H. (Gum ammoniac and rhubarb, āā. ʒj.; assafœtida and saffron, āā. ʒss.; aloes, gr. x.; medicinal soap, ʒiij.; for three grains pills.) Dose, from No. iv. to vj. a day.——*Mistura ammoniaci,* U. S., L. (Ammoniacum, ʒij.; water, Oss.)——*Lac ammoniaci,* D. (Ammoniacum, ʒj.; pennyroyal water, f.ʒviij.)——*Mistura ammoniaci et antimonii,* or *White mixture,* U. S. (Ammoniacum mixture, f.ʒiv.; wine of antimony, f.ʒiv.; syrup of tolu, f.ʒj.; opiated tincture of camphor, f.ʒiv.)——*Emulsio ammoniaci,* F. (Gum ammoniac, 1; peppermint water, 16.)——*Tinctura gummi ammoniaci,* P. (Gum ammonia, 1; alcohol, 4.) Dose, from ℈j. to ʒss. in a mixture.——*Dr. Paris' expectorant emulsion.* (Gum ammoniac and nitric acid, āā. ʒj.; water, ℥iv.) Dose, a table-spoonful in a mucilaginous drink.

Externally. Emplastrum ammoniaci, U. S., L., E., Den. (Ammoniacum, ℥v.; vinegar, half a pint; dissolve and evaporate to a proper consistence.)——*Emplastrum ammoniaci cum hydrargyro,* L. (Ammoniacum, ℔j.; mercury, ℥iij.; sulphuretted oil, f.ʒj.)—D. (The same, except turpentine, ʒij. instead of the sulphuretted oil.)——*Emplastrum ammoniaci,* Pol., Pr. (Gum ammoniac, 3; galbanum, 1; wax, resin, and turpentine, āā. 2.)—F., A. (Gum ammoniac, galbanum, and wax, āā. 1; litharge plaster, 6.)—Guy's H. (Gum ammoniac, ℥viij.; vinegar of squill, ℥ij.)

Galbanum, *Gummi-resina galbanum,* which is furnished by the *Bubon galbanum,* Lin. an African plant, very nearly related to the *Ferula,* is in tears, or yellowish masses, semitransparent, soft, tenacious, of a granulated fracture, of a strong and peculiar odour, of an acrid and bitter taste. Its composition, according to Mr. Pelletier, is very similar to that of assafœtida, it possesses nearly the same properties, but it is very little used at present. It only enters into the composition of several officinal preparations.

The same may be said of the Sagapenum, *Gummi-resina sagapenum,* which is supposed to be furnished by the *Ferula persica,* a plant of Asia Minor, and which is found in commerce in soft masses, pitch-like, brown principally on the exterior, semitransparent, mixed with fragments of seeds, of an acrid and unpleasant taste, of an odour not dissimilar to that of assafœtida, but not so strong.

Opopanax. *Opopanax.* A gummo-resinous juice, furnished by the *Pastinaca opopanax,* Lin. a plant of the Levant and of the south of France. It possesses properties analogous to those of the preceding substances, and is now very little used. It is in irregular tears, angular, opaque, friable, of a reddish colour ex-

ternally, of a yellow intermixed with red internally. Its taste is acrid and bitter, and its very strong smell slightly resembles that of myrrh. It enters into the composition of several officinal preparations.

[Marsh Smallage. *Selinum palustre*, Lin. A plant growing in the Northern parts of Europe, in marshy places. P. U. The root.

B. C. Stem straight, cylindrical, branchy; leaves large, petiolate, alternate, three or four-pinnate; folioles linear, oblong, opposite; flowers in terminal and large umbels; involucrum and involucellum composed of eight or ten linear folioles; fruit, compressed, elliptical, winged.

P. P. Root thick, fusiform, of an acrid taste.

C. P. According to Mr. Peschier, it contains a volatile and a fixed oil, soluble in ether and alcohol, a gummi principle, a yellow colouring matter, a muco-saccharine principle containing nitrogen, a peculiar acid, phosphate of lime, and lignous matter.

T. E. This plant had been considered as an emmenagogue and a diuretic, but it had been abandoned as a caustic poison, the internal exhibition of which might be dangerous. Drs. Schmutziger, Arminan, and John, of Switzerland, have lately published cases of epilepsy treated successfully by this remedy. The dose is from ten to twenty grains, according to the age of the patient, repeated every five hours, and after a time gradually augmented. The period of treatment varies from six weeks to three months. Dr. Schmutziger forbids the employment of the selinum when there exists obstructions in any abdominal organs, or when the genital apparatus is in a state of exalted sensibility; and, according to Dr. John, this remedy augments the violence of the disease in those persons whose circulatory and nervous systems are very irritable.

Several children at Geneva, from twelve to eighteen months old, who had been sufferers from convulsions during the process of dentition, experienced almost immediately the good effects of this substance, administered four times a day, in doses of two grains.*]

Family Aroideæ.

[Skunk Cabbage. Swamp Cabbage. *Symplocarpus fœtida*, Salisb. *Pothos fœtida*, Mich. *Dracuntium fœtidum*, Willd.

*[We are the more pleased to introduce this new and very interesting article in the materia medica of this country, that several other species of *selinum* yield on analysis the same principles, and have been used with similar success. Our native species, the Marsh Parsley, *Selinum canadense*, Michaux, growing plentifully on the mouth of large rivers, from Canada to Carolina, is nearly related to the European plant, and deserves to be tried by our practitioners in that dreadful disease, epilepsy, as well as in convulsions of children.]—Am. Eds.

Ictoides fœtidus, Bigelow. A perennial native plant of North America, growing in boggy woods, swamps, and other moist places. P. U. The roots.

B. C. Spathe ventricose, ovate, acuminate; spadix roundish, covered with hermaphrodite flowers; calix deeply four-parted, persistent; segments cuculate, truncate, becoming thick and spongy; petals none; style pyramidal, four-sided; seeds solitary, immersed in the spongy receptacle; leaves very large, smooth, and green, strongly veined and entire, preceded by conspicuous sheating stipules.

P. P. Root verticillately fibrous, truncate; fibres whitish, coloured with brownish red rings. Every part of the plant, even the seeds, is imbued with a peculiar fetid smell, resembling that of assafœtida, or the odour thrown off by the skunk or pole cat, whence its name.

C. P. It seems to contain a volatile acrid principle, readily dissipated by heat; a resinous substance, and a gummy or mucous principle. The seeds contain a considerable quantity of fixed oil.

Th. E. The root of this plant possesses very considerable antispasmodic powers, similar to those of assafœtida, and other fetid gums. It has been highly recommended by the Rev. Dr. Cutler, and many other physicians, as a palliative in spasmodic asthma. Dr. Eberle remarks that he has derived very considerable advantage from the employment of this remedy, in several instances of this disease. Dr. Thatcher, of Boston, states, on the authority of a correspondent, that two tea-spoonfuls of the powdered root gave very prompt and effectual relief in a case of hysteria, after the ordinary remedies for such affections had been used without benefit. The same writer states, that it has afforded much advantage in chronic rheumatism, in wandering spasmodic pains, and in hooping-cough, in chronic coughs of patients, having a cold and phlegmatic habit. In spasmodic affections of the abdominal muscles, during parturition, or after delivery, this root has proved very beneficial.

As its active properties depend on a volatile principle, which is impaired by long keeping, especially in powder, it is better to preserve it in well-stopped bottles, cut up in slices, ready to pulverize when wanted. It is given in pills, or mixed with syrup, in doses of ten to forty grains, two or three times a day. Decoction greatly impairs its virtues.]

Family Valerianæ.

Wild Valerian. *Valerianæ sylvestris radix. Valeriana officinalis*, Lin. A perennial plant, indigenous to Europe, and flowering in May and June. P. U. The root.

B. C. Stem cylindrical, striated, villose, from three to four feet high; leaves deeply cut, the inferior ones petiolate, the superior sessile; flowers small, of a pink-white colour, cymose, and supported on peduncles several times tri-forked; three stamina; fruit, an ovoid capsule surmounted by a plumose pappus jutting out from the calix.

P. P. The valerian root is composed of a great number of cylindrical radicles, two or three lines in diameter, whitish internally and yellowish externally, possessing scarcely any smell when fresh, acquiring on the contrary, a very strong and fetid odour by desiccation; its taste is acrid and bitter.

C. P. According to Tromsdorff, it contains a peculiar principle, soluble in water, and insoluble in alchol and ether, 48; black resin, 24; a very volatile oil of a greenish white, of a strong camphorated smell, 1; gummous matter, 36; fecula, 6; and lignin, 266. Boiling water, alcohol, and ether take up its active principles.

Th. E. Valerian is a very powerful general excitant, but its influence is principally felt by the brain. Indeed, in large doses it causes dazzling, convulsive contractions, agitation, &c. In small doses, it acts as an antispasmodic and a tonic. It is used with advantage in hysteria, epilepsy, certain head-aches, and other neuroses. It proves frequently very useful in hypochondria, and serious fevers with atonic symptoms. Finally, it has been recommended as a powerful febrifuge, and it has, in fact, proved very useful in certain intermittent fevers.

D. & M. of Adm. *Powder*, ℈ij. to ʒj. two or three times a day, and gradually to ʒiv. and ʒvj. *Decoction*, ʒj. to ʒiv., to ℔ij. of water.——*Infusum Valerianæ*, U. S. (Valerian, ʒij.; boiling water, Oss.)—D. (Valerian, ʒij.; boiling water, f.ʒvij.)——*Aqua distillata Valerianæ*, P., A. Dose, from ʒij. to ʒiv.——*Extractum valerianæ*, D., P., A., Pol., Pr., Den. Dose, from ℈j. to ʒss.——*Tinctura valerianæ*, U. S., L., D. (Valerian, ʒiv.; diluted alcohol, Oij.)—P. (Valerian, 1; alcohol, 6.)—A. (Valerian, 1; alcohol, 12.)——*Tinctura valerianæ ammoniata*, U. S., L., D. (Valerian, ʒij.; ammoniated alcohol, Oj.)—Pr., Pol., Den. (Valerian, 1; volatile spirit of ammonia, 12.) Dose, from ʒj. to ʒij. in milk, or mucilaginous drink.——*Tinctura valerianæ æthereæ*, Pol., F., Pr. (Valerian, 1; sulphuric ether, 8.) Dose, from ʒss. to ʒj.——*Oleum valerianæ*, Pr., Pol., A. Dose, from gut. iv. to gut. vj.——*Oleo-saccharum valerianæ*, Pr. (Oil of Valerian, 1; sugar, 24.)

The Garden Valerian, *Valeriana major*, *V. phu*, Lin. the Small Valerian, *V. dioica*, Lin. and the Celtic Valerian, or Nard, *V. celtica*, Lin. possess the same properties as the preceding, but in a weaker degree, and may be used as a substitute for it. They were once frequently resorted to in the practice of medicine—they are now almost entirely neglected.

Family Aurantiaceæ.

Orange Flowers. *Aurantii flores. Naphæ flores.* Flowers of the *Citrus aurantium.* (See page 208.)

P. P. These flowers are white, of a most delightful smell, of a bitter and aromatic taste.

C. P. They contain an essential oil, called *Neroli*, a yellow bitter matter, soluble in water and alcohol, and insoluble in ether; some gum, albumen, acetate of lime, free acetic acid, and sulphur. Water and alcohol dissolve their active principles.

Th. E. The stimulating action of this remedy is rather weak, but it exercises a very decided influence on the nervous system, upon which it acts as an antispasmodic. It is daily employed with a good deal of success in a great number of nervous affections. The distilled water of these flowers, which is the preparation most commonly used, enters into the composition of a great number of mixtures.

D. & M. of Adm. *Infusion.* One to two pinches to ℏbij. of boiling water.—— Distilled water, P.—*Aqua florum aurantii* seu *Naphæ*, A., Pol., Den., F., Pr., B. Dose, from ℥j. to ℥iv.——*Syrupus florum aurantii*, P., Pol., Pr. (Distilled orange flower water, 1; sugar, 2. Dose, from ℥j. to ℥ij.——*Essential oil*, P. Dose, from gut. ij. to gut. vj.

Orange Leaves. *Aurantii folia.* Leaves of the *Citrus aurantium.*

P. P. They are oval, entire, smooth, shining on both sides, and furnished with a great number of vesicles containing an essential oil of an aromatic odour and of a bitter and warm taste.

C. P. They contain an essential oil, an extractive matter, and some tannin. Water and alcohol take up their active principles.

Th. E. The orange leaves possess tonic and stimulant properties tolerably energetic. They seem, besides, to act upon the nervous system in the same manner as the flowers. They are daily employed in small doses in nervous diseases, such as certain kinds of dyspepsia, hysteria, convulsive coughs, palpitations, &c. In large doses, they are administered in the treatment of epilepsy, and some advantages which had been obtained from their employment had induced the belief that they were a sure remedy for that dreadful disorder; but more careful observation has destroyed the expectations which had been entertained. However, we have known them to succeed in the practice of Dr. Husson.

D. & M. of Adm. Powder, as anti-epileptic, ℈j. to ℥j. gradually, in the form of bolus, or of electuary made with honey. Infusion, No. iv. to x. to ℏbij. of water. Decoction, No. xxx. to xxxvj. to ℏbij. of water.

Family Tiliaceæ.

Lime or Linden Tree Flowers. *Flores tiliæ. Tilia europæa*, Lin. A tree native of Europe, common in the woods. P. U. The flowers.

B. C. Trunk forty to fifty feet high; leaves alternate, cordiform, dentate, villose; flowers yellowish, united four or five together in a small umbel, adnate to the centre of a long and narrow bracte or floral process; calix caducous, five-parted; corolla, 5 petals; stamina numerous and distinct; ovary with five bi-ovulate cells; fruit, a globular, five-celled capsule.

P. P. These flowers have a very pleasant smell, and a sweet and mucilaginous taste.

C. P. They contain, as do all the other parts of the tree, a large quantity of mucilage; water and alcohol take up their active principles.

Th. E. The lime tree flowers are considered as antispasmodic and slightly diaphoretic. Indeed, they seem to possess these properties, but in a very small degree. It is one of the most popular medicines in France and other parts of Europe. Their infusion and distilled water are daily administered in a number of diseases, and especially in nervous affections. They are the menstruum of many mixtures.

D. & M. of Adm. Infusion, one pinch to ℏbij. of boiling water. Infusion, called *Tilleul-orange*, Paris H. (Infusion of lime tree flowers, ℏbij.; orange flower water, ʒij.; spirit of sulphuric ether, ʒij.)——*Distilled water*, P. Dose, from ʒij. to ʒiv.

Cajeput Oil, *Oleum cajeput*, is obtained by distillation, from the leaves of the *Melaleuca leucadendron*, Lin. *Melaleuca cajeputi*, Smith and Maton; a shrub of the family *Myrtineæ*, growing in Amboine and Borneo, is not used in France, but very much employed in Asia and England. It is transparent, of a fine green colour, very fluid, lighter than water, very volatile, of a strong smell similar to that of a mixture of camphor and essence of turpentine, of a sharp and fresh taste, analogous to that of camphor. It possesses very decided stimulant and diaphoretic properties, and seems to act also very efficaciously as an antispasmodic. The English practitioners administer it in gastralgia, hysteria, and other nervous diseases, in chronic rheumatic affections, certain kinds of palsies, &c. Dose, gut. iij. to vj. and more, on sugar, or dissolved in alcohol. Externally, this oil is very successfully employed in frictions, mixed with olive oil, in order to sooth the pains of gout and rheumatism, in head-aches, &c.

The Pæony Root, *Pæonia officinalis*, Lin., of the family *Ranunculaceæ*, has been recommended as one of the most powerful antispasmodics, and was formerly employed in epilepsy. It possesses, however, but a very feeble action. It was administered in powder, in the dose of ʒss. to ʒj. A *distilled water* is likewise prepared from its flowers, which is used as a menstruum for antispasmodic and stimulant mixtures.

The Stinking Orach, *Chenopodium vulvaria*, Lin., an European plant of the family *Chenopodeæ*, has a very fetid smell, and contains free sub-carbonate of ammonia. It is occasionally employed as antispasmodic, in hysteric affections.

Antispasmodic Substances of the Animal Kingdom.

Musk, *Moschus*, a peculiar substance, secreted by a kind of bag, two or three inches in diameter, situated under the skin, behind the navel and before the prepuce of a mammiferous animal called *Moschus moschiferus*, Lin., of the class of ruminating animals without horns. This quadruped is an inhabitant of Thibet, Independent Tartary, China and Siberia. This secretory organ is peculiar to the male; the female has it not. This bag is more abundantly provided in the rutting time. Indeed, it is then that the secreted humour has the strongest smell.

P. P. Musk is solid, in unctuous grains of a deep brown colour, with a reddish hue, which, at first sight, has some resemblance to dry and coagulated blood. Its odour is peculiar, very diffusible and persistent; its taste is slightly bitter and disagreeable. In commerce, we always require that it should be contained in its membranous bag to insure its genuineness.

C. P. According to Messrs. Blondeau and Guibourt, it is composed of water, ammonia, stearin, elain, cholesterin, an acid oil combined with ammonia, a volatile oil, an unknown acid, gelatin, albumen, fibrin, a carbonated matter soluble in water, salts with base of ammonia, potassa, and lime; finally, hair, sand, and other foreign matters. Musk is very inflammable, and burns with a white flame, leaving a residue of a spongy and light charcoal. Boiling water and alcohol dissolve it in part, and sulphuric ether almost completely.

Incomp. Subst. Deuto-chloride of mercury, sulphate of iron, nitrate of silver, and infusion of Peruvian bark.

Th. E. Musk acts like the diffusible stimulants, but it exercises, moreover on the nervous system a peculiar and very remarkable action, which has caused it to be considered as one of the most powerful antispasmodics we possess. It is employed with advantage in typhoid fevers, and in those complicated with asthenia, in order to abate the nervous symptoms, such as delirium, subsultus tendinum, convulsive motions, &c. It has been likewise recommended in hooping-cough, epilepsy, tetanus, hydrophobia, hysteria, and other affections, merely spasmodic. United with ammonia, it has been used in England with success in stopping the progress of gangrene. Administered in an enema, it very frequently succeeds in calming the convulsions of children, produced by dentition. This remedy is generally very little used,

owing to its excessive price, and the difficulty of obtaining it pure.

D. & M. of Adm. Gr. vj. to ʒss. in pills, or suspended in a mixture by means of a mucilage.——*Mistura moschi*, U. S., L. (Musk, gum Arabic, and sugar, āā. ʒj.; rose water, f.ʒvj.) Dose, from ʒj. to ʒij. every two or three hours.——*Musk mixture*, Paris H. (Musk, gr. xij.; sugar, ʒij.; water, ʒij.)——*Pulvis moschi compositus*, R. (Musk, 8; valerian, 10; camphor, 3.) Dose, from gr. x. to xx.——*Musk pills*, Paris H. (Musk, ʒij.; oxide of zinc, ʒj.——*Anti-hysteric pills*, Paris H. (Musk and extract of valerian, āā. ℈j.; extract of opium, gr. xij.) For 16 pills.——*Tinctura moschi*, U. S., D. (Musk, ʒij.; alcohol, Oj.)—P. (Musk, 1 part; alcohol, 4 parts.)——*Tinctura moschi ætherea*, P. (Same proportions and doses.)

Castor. *Castoreum.* A peculiar substance, analogous to musk, secreted by two pairs of membranous bags, elongated and pyriform, situated under the skin of the abdomen, between the anus and pudendum of a mammiferous animal of the family *Rodentia*, called beaver, *Castor fiber*, Lin. inhabiting the northern parts of Europe, Asia, and America.

P. P. This substance is solid, brittle as resin, and nevertheless slightly unctuous, of a reddish-brown colour, of a strong, disagreeable, and peculiar smell, of a bitter, slightly acrid, and nauseous taste. It is found in commerce in the bags in which it is secreted. These two bags are united together by a kind of natural ligament, which seems to be the excretory duct. They are of a brown colour, dry and wrinkled, pyriform, and divided internally into cells by membranous partitions. Of these two bags, one larger, and of a more round shape, contains the true castor; the other, much smaller, is almost empty, and contains hardly any thing but a fatty substance.

C. P. Castor contains, according to Mr. Bizio, a peculiar matter, called *Castorin*, and according to the analysis of Messrs. Bouillon-Lagrange, and Laugier, an odorous volatile oil, benzoic acid, cholesterin, a resin, a reddish colouring matter, iron, salts with base of potassa, lime, and ammonia. It is very little soluble in water, but dissolves much better in ether and alcohol.

Castorin is, according to Mr. Bizio, the active principle of castor; it is neither acid nor alkaline; it is solid and crystallizes in thin, elongated, and diaphanous prisms, disposed in bundles; of a smell similar to castor and of a copperish taste. This substance, almost insoluble in cold water and alcohol, dissolves in 100 parts of the latter liquid when boiling. Sulphuric and acetic acids dissolve it without the assistance of heat. It is obtained by boiling one part of castor in six parts of alcohol; filter the liquor and leave it to itself, and the castorin precipitates by degrees.

Th. E. Castor, as well as musk, is endowed with very valua-

ble stimulant and antispasmodic properties. It acts evidently upon the nervous system in a special manner; and this action is the more marked, in proportion as the disorder in the functions of this system is the more considerable, provided however that this disturbance be not attended with inflammation. It is consequently employed with success for the cure of spasmodic affections, such as hysteria, hypochondria, nervous palpitations, convulsive hiccough, epilepsy, nervous asthma, amenorrhœa depending on the spasmodic state of the uterus, &c. On account of its stimulating action, it has proved useful in typhoid, adynamic, and ataxic fevers, to restore the strength and abate the nervous symptoms.

D. & M. of Adm. Powder, gr. x. to ℈j. and even ʒj. several times a day, in pills or suspended in a proper menstruum——*Antispasmodic pills*, Paris H. (Castor, gr. vj.; valerian, gr. xxx.; oxide of zinc, gr. xx.; simple syrup, q. s. for 3 pills.) No. iij. a day.——*Tinctura castorei*, U. S., L., D. (Castor, ʒij.; alcohol, Oij.)—E. (Castor, ʒjss.; alcohol, ℔j.)—P. (Castor, 1 part; alcohol, 4 parts.) Pol., A., Den., Pr. (Castor, 1; alcohol, 6.)—R. (Castor, 1; alcohol, 24.) Doses in proportion of the strength.——*Tinctura castorei ætherea*, P. (Castor, 1; sulphuric ether, 4.)—Pr., Pol., Den. (Castor, 1; sulphuric ether, 6.) gut. x. to xxx.——*Tinctura castorei composita*, E. (Castor, ʒj.; assafœtida, ʒss.; ammoniated alcohol, ℔j.) From ʒss. to ʒij.——*Dr. Paris's Antispasmodic mixture*, (Tincture of castor and volatile tincture of valerian, āā. ʒj.; powder of valerian, ℈j.; camphorated mixture, f.ʒxij.) Three times a day.

Externally. Powder, ʒss. to ʒj. suspended in a mucilage of gum Arabic, for an enema.

Civet. *Zibethum.* A substance secreted as the preceding, by a bag situated near the anus of the Civet, *Viverra civetta*, Lin. A carnivorous quadruped, nearly related to the fox and cat. It is of a thick consistence, unctuous, whitish, of a strong and agreeable smell, and of a slightly bitter taste. It possesses the same virtues as musk and castor, and was formerly employed in the same cases as these two substances. It is now almost out of use.

Ambergris. *Ambragrisea. Ambarum cineritum.* A sort of Bezoar or morbid concretion which forms in the intestines of the *Catodon macrocephalus*, Lacép. a cetaceous fish. It is most commonly found in the cœcum, amidst a sort of soft substance of an orange or red-yellow colour, and among numerous remains of cuttle-fish bones. It is principally found floating on the surface of the sea, on the coast of India or in the neighbourhood of China and Japan, &c.

P. P. Ambergris is in irregular masses, most commonly globular, of various sizes and weights, formed of concentric layers, of a granulated grayish substance, intermixed with blackish, or whitish points. It is opaque, of a scaly fracture, of a variable consistence, but commonly hard and brittle, easily retaining, however, the impression made with the finger nail; of an insipid taste, and of a strong smell *sui generis*.

C. P. This substance, according to Pelletier, is composed of Ambrein, a peculiar proximate principle, containing nitrogen, crystallizable and analogous to cholesterin, 52.7; resin, 30.8; benzoic acid, 1.11; and a carbonated substance, 5.4. Heated, it becomes soft and melts in a thick and blackish oil, which volatilizes without leaving any residue. It burns rapidly and with a vivid light. It is insoluble in water, but dissolves easily in alcohol, ether and certain fixed oils.

Th. E. Ambergris is a moderately powerful general excitant, the action of which seems to be principally spent on the nervous system. It has been employed with success in cases of neurosis, convulsions, adynamic fevers, &c. It is now very seldom used. It formerly entered into a great number of officinal preparations.

D. & M. of Adm. Gr. vj. to ℈j. in powder.——*Pulvis ambræ moschatus*, B. (Ambergris, 18; musk, 3; oil of cinnamon, 2; sugar, 288.) gr. xij. to ℈j.——*Trochisci de ambrâ*, B. (Ambergris, 6; oil of cinnamon, 3; musk, 2; sugar, 2880; mucilage of gum Arabic, q. s.)——*Tinctura*, P. (Amber, 1; alcohol, 2.) ℈j. to ʒss. in a mixture.——*Tinctura ambræ cum moscho*, Pr. (Ambergris and musk, āā. 1; sulphuric ether, 4; alcoholic sulphuric ether, 24.) Dose, gut. vj. to xxx.——*Tinctura ambræ balsamica Dippelii*, B. (Ambergris and balsam of Peru, āā. 1; carbonate of potassa, 3; alcohol, 36.) Dose, gut. xv. to xxx.

Succin or Yellow Amber. *Succinum* or *Ambarum luteum*. A substance nearly related to resins, found in tertiary soils and upon the shores of the Baltic sea.

P. P. It is solid, hard, brittle, of a vitreous fracture, often transparent, sometimes opaque, capable of acquiring a polish, of a more or less deep yellow or even red hyacinth colour, inodorous, insipid, of a specific gravity of 1.078.

C. P. Heated in the air, succin becomes soft, melts and burns, emitting an aromatic odour. It gives over, by distillation, a peculiar acid called *succinic*, some essential oil, water, acetic acid, a peculiar matter, (investigated by Messrs. Colin and Robiquet,) and a good deal of charcoal. It is insoluble in water, and dissolves partly in alcohol and in a solution of sub-carbonate of potassa. After having been melted, or after mixing it with a little camphor, it becomes soluble in fixed and volatile oils, and forms thus a fine varnish, much sought after in the arts.

Th. E. This substance has been highly recommended as an antispasmodic, it entered formerly into the composition of a great number of preparations. It is now very seldom employed. Dr. Hufeland, however, asserts, having obtained great advantages from its employment in sphacelus. The essential oil it yields by distillation, is sometimes administered in spasmodic affections, and is principally used in frictions, in rheumatic, gouty affections, &c.

D. & M. of Adm. *Tinctura succini*, P. (Succin, 1; alcohol, 16.)—Pr., Pol. (Succin, 1; alcohol, 4.) Dose, from gut. x. to ℈j., in a mixture.——*Oleum succini*, U. S., P., L., E., D. Dose, from gut. iv. to vj.

Externally, in frictions.

Succinic Acid, *Acidum succinicum*, exists already formed in succin, from which it is extracted by distillation; it is white, transparent, of an acidulous and acrid taste, and crystallizes in prisms. It is very soluble in water, and forms with salifiable bases salts, which are used as chemical tests. This acid is almost out of use at present, except in the preparation of a syrup, which is frequently added to antispasmodic mixtures, in doses of ʒij. to ℥j., and called *Karabe syrup*, (Succinic acid, 1; syrup of opium, 192.)

Dippel's Animal Oil, *Oleum animale æthereum*, is obtained by distilling solid animal matters, such as bones, horns, &c. It is white, turning brown on exposure to air, of a very fetid smell, and of an acrid and most disagreeable taste. In large doses it proves a very active poison; in small doses it has, for a long time, been recommended as an antispasmodic, and was administered principally in epilepsy. It is now almost out of use. It was given in the dose of five to twenty drops, on sugar, or dissolved in water.

CHAPTER VIII.

NARCOTIC REMEDIES.

Narcotic remedies, (ναρκοω, I stupify,) called likewise anodyne, (α, priv., and ὀδυνη, pain,) stupefacient, sedative, hypnotic, (ὑπνόω, I put to sleep,) &c. are distinguished from all others by the special and primary influence they exercise on the nervous system, and principally on the brain; an influence characterized by a diminution of activity, and even momentaneous interruption of the functions of these important organs. Administered in very small doses, they have scarcely any action except a local one, and act merely by diminishing the sensibility and irritability of the parts with which they are in contact. In somewhat larger doses, their action extends farther; they produce a slight degree of debility, a state of general repose, which is most commonly followed by sleep. But should the quantity be still greater, they produce a complication of symptoms, called *narcotism*. This state is characterized by heaviness of the head, dimness of sight, diminution of the activity of the intellectual faculties, muscular weakness, prostration of strength, and a sleep more or less comatose, sometimes calm, but most commonly very agitated, or else a violent cephalalgia, vertigo, convulsive motions, hallucinations, and a peculiar state, resembling both sleep and intoxication, during which the mental faculties are annihilated, and the patient, although benumbed and extremely languid, experiences, however, a violent agitation, anxiety, &c. These symptoms, when the dose of the narcotic substance is sufficiently powerful, are generally followed by a profound coma, precursor of death. During narcotism, circulation is sometimes slightly accelerated, at others less frequent, but the pulse is almost always unequal and irregular; respiration is laborious, and the capillary circulation of the skin seems to occur with greater difficulty; indeed, an abundant perspiration frequently takes place. The effect of these remedies upon the digestive organs is still more remarkable, for even in small doses they diminish appetite, and when they produce narcotism, the process of digestion is almost entirely stopped, as we have proved by the physiological experiments which we have performed together with Dr. Breschet, and which have been inserted in the *Archives Générales de Médecine*.

After all we have stated, it is evident that the action of narcotics differs materially from that of the remedies which have been previously mentioned. The influence of those remedies, it is true, is spent in a special manner on the nervous system; but they stimulate it

more or less, imparting to it strength, as it were, and regulating its action. Narcotics, on the contrary, whether they act by diminishing the sensibility and contractibility without producing sleep, in the manner of the hydro-cyanic acid, or whether they affect at the same time the intellectual faculties, and produce narcotism, as opium, have always a tendency to weaken, or even destroy, more or less completely, the functions of the nervous system.

Most of the remedies endowed with these properties are vegetables remarkable for their virose smell; and most of them owe their activity to the presence of a peculiar principle, of the nature of organic alkalies; others, the odour of which is not less characteristic, contain hydro-cyanic acid as their active principle.

We have recourse to narcotics principally as a means of soothing pain and procuring sleep. Administered in a proper manner, they may be very useful in the treatment of neuroses in general, neuralgia, rheumatic and other pains, fevers attended with nervous symptoms, in the last period of cancerous affections, &c. Their employment is counter-indicated whenever the debility of the patient is very great. They require to be used with a good deal of caution in acute inflammations of the internal organs, and only in cases when the violence of the pain would exhaust the strength of the patient.

Family Papaveraceæ.

Opium. *Opium.* Concrete juice, extracted from the white or somniferous poppy, *Papaver somniferum*, Lin. a plant, native of Asia, and which has been cultivated for some time in Europe.*

* [The successful experiments which have been made, in England and France, on the culture of the white poppy, for the purpose of obtaining opium, ought to be a great inducement for our farmers to undertake the cultivation of this valuable plant. In 1796, Mr. Ball received a premium from the society for the encouragement of arts, for a specimen of English opium little inferior to the Turkey opium. Messrs. Cowley and Stains, in 1823, collected one hundred and ninety-six pounds of opium, which sold for 30*s.* 6*d.* per pound, from little more than twelve acres of land. But it has been most successfully cultivated by Mr. Young, who supposes that by sowing the poppies between early potatoes, the following may be the probable return, at least such was the result of his experiments, for one acre:—

56 lbs. of opium, at 36*s.* per lb. - - - - -	£. 100 16 0
86 boles of early potatoes, at 24*s.* - - - - -	43 4 0
250 lbs. of oil, cold drawn, at 1*s.* 6*d.* - - - -	18 15 0
125 lbs. of oil, warm drawn, at 6*d.* - - - -	3 2 6
500 oil cakes, at 18*d.* per 100 - - - - - -	4 10 0
	£. 170 7 6
Expenses	60 0 0
Profit	£. 110 0 0

See Transactions of the Society of Arts, XIV. 260 *to* 270.—*Edinburgh Philoso-*

B. C. Stem cylindrical, smooth, from three to four feet high; leaves sessile, elongate, semi-amplexicaule, glaucous, irregularly cut on the borders; flowers solitary, terminal, red or white, very large; corolla four petals, about one hundred stamina; stigma orbicular, stellate; fruit, a round capsule, crowned by the persistent stigma, and containing numerous white or grey seeds, very small and reniform.

P. P. Opium, such as it is brought from the Levant, is in flattened, circular masses, reddish externally, of a blackish brown internally, hard, with a shining and compact fracture, of a bitter, acrid, and nauseous taste, of a peculiar *virose* smell, and of a specific gravity of 1.336. Worked with the fingers, this substance becomes soft, tenacious, and resembles pitch.

C. P. Opium is partly soluble in water, alcohol, ether, vinegar, lemon juice, &c. Rubbed in warm water, five-twelfths are dissolved, six-twelfths are suspended, and one-twelfth remains insoluble. Heated in the air it inflames and burns rapidly. It is composed of an alkaline principle, discovered by Sertuerner, and called *Morphia*, which, according to Robinet's experiments, is combined with a peculiar acid he designates by the name of *codeic;* of another peculiar acid, called *meconic acid*, which, in opium, seems to be combined with soda; of a crystallizable principle, discovered by Derosne, and named *narcotin;* finally, of extractive matter, mucilage, fecula, resin, fixed oil, a glutinous matter similar to caoutchouc, a vegeto-animal substance, vegetable fibres, and sand.

Incomp. Subst. Ammonia, carbonates of soda and potassa, corrosive sublimate, nitrate of silver, acetate of lead, the sulphates of copper, zinc, and iron, and the infusion of galls.

Prep. The common opium of commerce is obtained by repeated incisions made in the capsules of the poppy. A viscous juice exudes from the wounds, which becomes thick by exposure to the air. It is then mixed with the inspissated juice expressed from the plant.

For pharmaceutical purposes, common opium is purified by treating it with a large quantity of cold water; by this operation an *aqueous extract of opium* is obtained, which is far preferable to that substance itself.

Th. E. Opium seems to act directly upon the nervous system. Administered in small doses, it diminishes sensibility, and produces a calm which procures sleep. This action is particularly

phical Journal, Vol. I. p. 258, 270.—*Quarterly Journal of Science, Vol. IV. p.* 69.

Dr. E. Staples, of our city, has, this year, cultivated some poppy plants, in the garden of Mr. Pratt, near Philadelphia, and obtained some opium. The seeds were sown in the beginning of April, and the capsules incised in the course of June. He intends making another trial next year, on a larger scale, and will probably publish the result of his experiments.]—Am. Eds.

remarkable when the patient is a prey to violent pains. In rather larger doses, it acts, first, as a very energetic stimulant, it increases the strength, frequency, and fulness of the pulse, as well as the animal heat and muscular power, it exalts the intellectual functions; but these effects are soon and gradually succeeded by languor, heaviness of the head, a general lassitude, and an agitated but not refreshing sleep. In large doses, it proves one of the most violent poisons. It induces a very intense inflammation of the digestive organs, accelerates and sometimes diminishes the activity of the circulation, but under every circumstance, the pulse is irregular. It produces a sort of intoxication, coma, in a word, all the symptoms which characterize *narcotism*, and may be attended with death. Opium is frequently used to mitigate pains, te relieve watchfulness, and diminish in many cases the exaltation of sensibility, and especially in most of the chronic organic diseases. It proves very successful in the treatment of diarrhœa and cholera morbus. It has been recommended in intermittent fevers, either alone, or in conjunction with tartar emetic or Peruvian bark. It is very useful in neuralgia, and, generally, in all the nervous and spasmodic affections. In *delirium tremens*, tetanus, and hydrophobia, it has been exhibited in very large doses. Its employment is counter-indicated in all diseases attended with a considerable inflammation, and when the febrile symptoms are well developed. However, united with calomel, it frequently produces very good effects in certain inflammations depending on local causes, such as fractures, burns, &c. It is one of the remedies most used, and which acts most efficaciously, when administered with judgment by a good practitioner.

D. & M. of Adm. *Opium purificatum. Extractum opii vinosi*, seu *laudanum*, P.——*Extractum opii aquosum*, P., D.——*Extractum opii gummosum*, B.——*Extractum opii*, L., E., Pol., Pr., A., Den. &c. Dose, from gr. ¼ to gr. ij.

Pulvis cornu usti cum opio, L. (Opium, ʒj.; burnt and prepared hartshorn, ℥j.; cochineal, ʒj.)——*Pulvis opiatus*, E. (Opium, ʒj.; prepared chalk, ʒix.)—Pr. (Opium, 1; gummous powder, 9.) Dose, gr. v. to xx.——*Pulvis cretæ comp. cum opio*, L. (Compound powder of chalk, ℥vj.; opium, ℈iv.) 20 grains contain half a grain.——*Pulvis ipecacuanhæ et opii*, U. S., E.——*Pulvis ipecacuanhæ compositus*, L.——*Pulvis ipecacuanhæ cum opio*, Pr., Pol., A., Den., F.——*Dover's powder*. (Opium and ipecacuanha, āā. 1; sulphate of potassa, or sugar, 8.) 10 grs. contain 1 gr. of opium.)—P. (Opium, ipecacuanha and liquorice, āā. 1; sulphate and nitrate of potassa, āā. 4.)——*Pulvis ipecacuanha opiatus*, R., B. (Opium and ipecacuanha, āā. 1; sulphate of potassa, 9.) 11 grains contains 1 of opium.——*Pilulæ opii*, U. S. (Opium, ʒj.; Castile soap, gr. xij. for 60 pills.)——*Pilulæ saponis cum opio*, L. (Opium, 1; hard soap, 4.)——*Pilulæ opiatæ* or *thebaicæ*, E. (Opium, 1 part; extract of liquorice, 7 parts; pimento berries, 2 parts.) 10 grains contain 1 grain of opium. Dose, from gr. v. to xx.——*Pilulæ e styrace*, D. (Purified storax, ʒiij.; purified opium and saffron, āā. ʒj.) 5 grains contain 1 grain of opium. Dose, gr. ij. to v.——*Pilulæ cynoglossi*, P. (Opium, cynoglossum root and hyosciamus seeds, āā. 8; myrrh, 12; olibanum, 10; saffron and castor, āā. 3; syrup of opium, q. s.) 9 grains contain 1 grain of opium.——*Camphorated anodyne pills*, New York H. (Opium, ʒij.; camphor, ℥ss.; mu-

cilage of gum Arabic, q. s. for pills, No. cxx.)—Paris H. (Opium, gr. iij.; camphor, gr. vj.; syrup, q. s. for 6 pills.) Dose, from No. j. to iij. a day.——*Pilulæ antimonii cum opio*, Guy's H. (Opium, gr. ij.; tartrate of antimony and potassa, gr. j.; theriaca, q. s. for four pills.) Dose, from No. j. to ij. once or twice a day.——*Pilulæ ipecacuanhæ cum opio*, Guy's H. (Opium and ipecacuanha, āā. gr. j.; conserve of roses, q. s. for 1 pill.) Dose, No. j. at night.——*Dr. Paris' calming pills*, (Opium, gr. ij.; aromatic confection, ʒss.; for 8 pills.) Dose, No. j. every 4 hours.——*Confectio opii*, L. (Opium, ʒvj.; long pepper, ʒj.; ginger, ʒij.; caraway seeds, ʒiij.; syrup, Oj.) 36 grains contain one of opium. Dose, from gr. xii. to ℈ij.——*Electuarium opiatum*, olim *thebaicum*, E. (Aromatic powder, ʒvj.; Virginian snake root, ʒiij.; opium, diffused in Spanish wine, q. s. ʒss.; syrup of ginger, ℔j.) 43 grains contain 1 of opium.——*Electuarium astringens opiatum*, seu *diascordium*, P. contains 1-184th of opium.——*Electuarium polypharmacum opiatum*, seu *theriaca*, P., contains 1-88th of opium.——*Trochisci glycyrrhizæ cum opio*, U. S., E. (Opium, ʒij.; tincture of tolu, f.ʒss.; syrup, f.ʒviij.; extract of liquorice and gum Arabic, āā. ʒv.—to form into troches, each weighing 10 grains, 6 of which contain one grain of opium.)

Tinctura opii, U. S., L. (Opium, ʒij.; diluted alcohol, Oij.) ♏xix. contain 1 grain of opium.—E. (Opium, ʒx.; proof spirit, ℔ij.) ♏xx. contain 1 grain of opium.—D. (Opium, ʒx.; proof spirit, Oj.) ♏xiv. contain 1 grain of opium.—P. (Opium, 1; alcohol 24.) ♏xxx. contain opium 1 grain.—Pr.; Pol., F. (Opium, 1; alcohol and cinnamon water, āā. 3.) f.ʒj. contains 10 grains of opium.——*Tinctura opii crocata, Sydenham's laudanum*, P., Den., Pol., Pr., B. (Opium, 16; saffron, 8, cinnamon and cloves, āā. 1; Spanish wine, 150.) 20 drops contain about 1 grain of opium.——*Vinum opii*, U. S. (Opium, ʒij.; cinnamon and cloves, āā. ʒj.; diluted alcohol, f.ʒij.; Spanish wine, Oj.)—L., E. (Extract of opium, ʒj.; cinnamon and cloves, āā. ʒj.; proof spirit f.ʒvj.; distilled water, f.ʒx.)——*Tinctura camphoræ opiata*, U. S. (Opium, benzoic acid, oil of anise, āā. ʒj.; liquorice, ʒss.; clarified honey, ʒij.; camphor, ʒij.; diluted alcohol, Oij.)——*Tinctura camphoræ composita*, L.——*Tinctura opii camphorata*, sive *Elixir paregoricum anglorum*, E., D., Den. (Camphor, ʒij.; opium and benzoic acid, āā. ʒj.; proof spirit, Oij.)——*Tinctura opii benzoica*, Pr. (Opium, benzoic acid, camphor and aniseed, āā. 1; alcohol, 192.) These preparations contain 1 grain of opium to f.ʒss. Dose, from ʒj. to ʒiv.——*Tinctura opii ammoniata*, formerly *paregoric elixir*, E. (Opium, ʒij.; benzoic acid, saffron, āā. ʒiij.; volatile oil of aniseed, ʒss.; ammoniated alcohol, ʒxvj.) Each f.ʒj. contains 1 grain.——*Acetum opii—Black drop*, U. S., Dr. Paris.* (Opium, ℔ss.; vinegar or verjuice; Oiij.; nutmeg, ʒjss.; saffron, ʒss.;

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* [Mr. Thomas Evans, in the second number of the Journal of the Philadelphia College of Pharmacy, first series, has very judiciously criticised this preparation as very unscientific and uncertain, and which ought not to be prescribed by any physician, on account of the variation in the strength of the different preparations; a variation which is owing principally to the indefinite expression "*boil them down to a proper consistence*," &c. Mr. Evans suggests the propriety of forming a menstruum with purified pyroligneous acid, water, and alcohol, instead of the vinegar of the shops, which is often impure and contains but a small proportion of acetic acid. He proposes, accordingly, the following recipes for two different *acetated tinctures of opium*, the one *simple* and the other *aromatic*.

Simple acetated tincture of opium.		*Aromatic acetated tincture of opium.*	
Pure pyroligneous acid,	f.ʒv.	To the preceding formula add:	
Water,	f.ʒvj.	Nutmeg, bruised,	ʒss.
Alcohol,	f.ʒviij.	Cardamom seeds, bruised,	ʒij.
Opium,	ʒij.		

mix the three liquids together and triturate the opium with the compound, digest with a gentle heat for ten days and filter through paper for use. This tincture yields by evaporation thirty-two grains of hard opium to the ounce.]—Am. Eds.

boil them down to a proper consistence and add sugar, ℥iv.; yeast, f.ʒj.)——*Vinum opiatum fermentatione paratum*, or *Abbè Rousseau's laudanum*, or *drops*, P. (White honey, 96; warm water, 384; yeast, 1; dissolve the honey with water and set it aside in a warm place; as soon as fermentation has commenced add good opium, 32, dissolved previously in water, 96; allow the whole to ferment together for a month at a temperature of 30° Centig. (86 Fahr.) and evaporate until 80 parts only remain, filter again and add alcohol, 32.) Both these preparations are nearly of the same strength and contain about 1 grain of opium to 6 drops.——*Liquor antimonii opiatus*, Guy's H. (Tincture of opium, ʒj.; solution of tartrate of antimonii and potassa, ℥iv.) Dose, from gut. xxx. to ʒij., every night.——*Calming looch*, Paris H. (Sydenham's laudanum, gut. xx. to xxx.; simple looch, ℥v.; orange flower water, ʒij.) A table spoonful every hour.——*Mistura opiata*, New York H.——(Tincture of opium, f.ʒij.; water and liquid acetate of ammonia, āā. f.℥iv.) *Emeto-anodyne mixture*, Paris H. (Sydenham's laudanum and sulphuric ether, āā. ℈j.; mineral kermes, gr. ij.; simple syrup, ℥j.; water, ℥iv.)——*Haustus opiatus*, Guy's H. (Tincture of opium, gut. xx.; pepper mint water, ʒv.; water, ʒiij.)——*Dr. Paris' sedative mixture*, (Tincture of opium, gut. xv.; syrup of poppy, ʒij.; spirit of cinnamon, ʒj.; water, ℥ss.) For a dose.

Syrupus opii, P. (Opium, 15; water, 64; simple syrup, 4800;) one ounce contains two grains of opium. Dose, from ʒij. to ʒiv. in a mixture.—D. (Watery extract of opium, gr. xviij.; boiling water, ℥viij.; sugar, q. s. to form a syrup;) each ounce contains one grain of opium.——*Syrupus opiatus*, Pr., Pol. (Opium, 1; Malaga wine, 13; althæa syrup, 461;) one ounce contains one grain of opium. Dose, from ℥ss. to ʒj.

Externally. Enema opii, New York H. (Infusion of flaxseed, f.ʒij.; tincture of opium, f.ʒj.)—Guy's H. (Tincture of opium, ʒj.; warm water, ℥vj.)—Dr. Paris. (Opium, gr. ij.; mucilage of gum arabic, ʒiv.; milk, ℥vj.)——*Calming injection*, Paris H. (Sydenham's laudanum, ʒj.; emollient decoction, ℔j.)——*Collyrium opiatum*, P. (Rousseau's laudanum, 7; gum arabic, 228; rose water, 1152.)——*Anodyne collyrium*, Paris H. (Sydenham's laudanum and tincture of saffron, āā. ʒj.; decoction of flaxseed, ℥iv.)——*Linimentum saponis et opii*, *Linimentum anodynum*, U. S. (Castile soap, ℥xij.; opium, ʒj.; camphor, ℥ij.; volatile oil of rosemary, f.ʒij.; alcohol, Cj.)—E. (Hard soap, ℥iv.; opium, ʒj.; camphor, ℥ij.; oil of rosemary, ℥ss.; alcohol, ℔ij.)—P. (Tincture of opium, 1; medicinal soap, 8; camphor, 4; oil of rosemary, 1; alcohol, 48.)—New York H. (Compound soap liniment, f.ʒjss.; tincture of opium, f.ʒss.)—Paris H. (Sydenham's laudanum, ʒj.; soap, ℥ss.; olive oil, ℥iv.)——*Opium cerate*, Paris H. (Opium, ʒj.; simple cerate, ℥iv.)——*Emplastrum opii*, L., E. (Opium, ℥ss.; resin, powdered, ℥iij.; lead plaster, ℔j.)——*Emplastrum opiatum*, Pr. (Opium, 2; elemi, mastic, olibanum, āā. 8; benzoin, 4; turpentine, 12; Peruvian balsam, 1.)——*Anodyne cataplasm*, Paris H. (Opium, ʒj. to ʒij.; flaxseed and barley meals, āā. ℔j.; narcotic decoction, q. s.)

[Denarcotized Laudanum. This preparation has for these two or three years past been exhibited in this city by several practitioners who consider it as possessing advantages over the common laudanum. Professor Hare proposed, in the number of May, 1827, of the Philadelphia Journal of the Medical Sciences, a process for the preparation of this medicine, which is as follows:

Shave some opium by rubbing it on the face of a jack-plane, subject it, four times successively, to as much ether of the specific gravity of .735, and kept nearly at the boiling point, as shall be sufficient to cover it, allowing each portion to act for twenty-four hours. By this treatment, the opium is deprived of its narcotin, it being dissolved by ether. Next, subject the denarcotized

opium to as much duly diluted alcohol as would have been sufficient to convert it into laudanum, had it not been subjected to the ether. This preparation is exhibited in the same doses as the common laudanum.]

Poppy Heads. *Papaveris capsulæ.* Dry capsules of the white poppy, cultivated in France and England.

P. P. They are ovoid, of the size of a hen's egg, dry, of a yellowish-white, inodorous, of a slightly bitter taste. They contain internally a very large quantity of small white seeds.

C. P. The capsules of the poppy seem to contain, besides a great quantity of mucilage and of vegetable fibres, the same principles as opium, and even morphia itself, but in less proportion. Water and alcohol take up their active principles.

Th. E. They possess the same virtues as opium, but in a much less degree. They are daily used in Europe, in decoction, either internally or externally, in cases in which anodynes are indicated. The extract prepared from them, although much less active than opium, is of great service under many circumstances, and has the advantage of acting as an anodyne in a very efficacious manner, without scarcely ever producing *narcotism.*

D. & M. of Adm. Decoction, No. j. to ij. to water, ℔ij.——*Extractum papaveris,* P., L., E. Gr. iv. to ℈j. in pills.——*Syrupus papaveris,* seu *Diacodium,* P. (Poppy heads freed from the seeds, 1 part; water and sugar, āā. 4 parts.)—L. (Capsules of the poppy, bruised and freed from the seeds, ℥xiv.; sugar, ℔ij.; water, q. s. to form a strong decoction and a syrup.)—E., D. (Poppy heads, freed from the seeds, 1 part; boiling water, 15 parts; sugar, 2 parts;) one ounce of this syrup is equivalent to about one grain of opium. Dose, from ʒj. to ℥j.——*Calming mixture,* Paris H. (Diacode syrup, ℥ss.; simple syrup, ℥j.; infusion of balm, ℥iij.; orange flower water, ℥ss.) Dose, a table-spoonful.

Externally. Decoctum papaveris, L. (Capsules of white poppy, bruised, ʒiv.; water, Oiv.; boil for a quarter of an hour;) in lotions, fomentations, clysters, &c. ——*Sedative fomentation,* Paris H. (Poppy heads, No. ij.; decoction of althea and water, āā. ℔ij.)——*Narcotic decoction,* Paris H. (Poppy heads, No. iv.; garden nightshade, ℥ij.; water, ℔ij.)

The petals of the Red Poppy. *Papaver rhœas,* Lin. An annual plant, native of Europe, very common, and found occasionally in this country, are of a fine red colour, of a slight virose smell and mucilaginous taste. They are frequently employed as emollient, and slightly anodyne, in pulmonary catarrhs and other inflammatory affections. They are often administered in infusion in the dose of from two to four pinches to ℔ij. of boiling water. A syrup is prepared from them called *Syrupus rhœados. Syrupus papaveris erratici,* P., L., D., Den., A., given in the dose of from ʒiv. to ℥j. in expectorating mixtures.

Morphia, a proximate principle of an alkaline nature, discovered by Sertuerner, and existing in opium and in the extract of the common poppy, combined, according to Robinet's experiments, with codeic acid.

P. P. This substance is white, in prismatic rectangular needles, inodorous, almost tasteless on account of its insolubility, but very bitter when it is dissolved. It is unalterable in the air.

C. P. According to Pelletier and Dumas, it is composed of carbon, 72.02; nitrogen, 5.53; hydrogen, 7.01; and oxygen, 14.84. It is almost insoluble in water; it dissolves slightly in this menstruum when boiling, and completely in alcohol, and in ether especially. Gently heated, morphia melts and forms on cooling in a radiated mass; at a high temperature, it is decomposed. It possesses alkaline properties, turns green the syrup of violets, combines with diluted acids, and forms neutral salts. Mixed with nitric acid, it acquires a lively red colour, and the salts of iron in the maximum of oxidation, strike a fine blue colour with it.

Prep. Treat an aqueous solution of opium with magnesia or ammonia, which precipitates the morphia, together with the narcotin. Wash the precipitate, first with weak alcohol, in order to separate the narcotin; then with boiling concentrated alcohol dissolve the morphia, which precipitates on cooling.

[Many improvements have lately been made in the preparation of morphia; but to Dr. E. Staples of Philadelphia, we are indebted for the simplest and most productive processes as yet devised for obtaining this valuable principle from the different sorts of opium. The great advantages medicine has derived from this substance, and the almost general employment which is now made of it in lieu of the preparations of opium, have induced us to give here a full account of Dr. Staples' process, such as we have been favoured by this gentleman himself. We will also mention that of Mr. Blondeau *by fermentation*, as an excellent one, although inferior to the former in point of product.

"The preparation of morphia is much facilitated by suspending the colouring matter and other inert substances, at the same time that the morphia is precipitated, as in the following formulæ: one part of opium in small pieces is digested in four parts of pure water, for several days, in a temperature of about 70° Fahr.; filter, wash the dregs of opium while on the filter, with one part of water several times returned to the dregs; unite the filtered liquor with the washing, and add to the highly coloured transparent solution thus obtained, an equal quantity of alcohol, (from four to five parts.) Immediately throw in a slight excess of ammonia, so much attenuated by alcohol that no apparent change takes place. In a few hours, morphia will be precipitated in a crystalline form. This method answers very well for the best opium, especially if it is dry.

For opium of medium quality the following is better adapted: one part of opium to two parts of water; digest for two or three days, then add three parts of distilled vinegar, and permit a fur-

ther digestion. Filter and wash the dregs of opium on the filter with one part of distilled vinegar; unite the first filtration with the washing, and add to this coloured transparent acetic solution an equal quantity of alcohol at 35°. Immediately throw in a slight excess of ammonia, so much attenuated by alcohol as not to produce any apparent disturbance. In a few hours the morphia will be precipitated in crystals.

Impure opium, especially if adulterated by substances very soluble in aqueous or acid menstrua, will require the following treatment to obtain its morphia: digest one part of opium in small pieces, in two parts of pure water; then add four parts of alcohol at 35°, and suffer the digestion to be continued for two or three days longer. Filter, wash the dregs of opium on the filter, with two parts of alcohol at 35°; unite the filtered tincture to the washing, and reduce this strong tincture to one-fourth of its bulk, by distillation in a water bath. When thus reduced, throw it, while still quite warm, into four parts of pure water. When cold, separate the cold liquor by filtration from the dark precipitate, and add to the transparent liquor an equal quantity of alcohol at 35°, (about six parts,) and treat it otherwise as in the above processes.

The crystalline precipitates obtained by the above formulæ may be rendered pure by solution in boiling diluted alcohol, or by reprecipitation from an acid solution, sufficient alcohol being added to suspend the small quantity of colouring matter remaining united to the crystals.

The first precipitates obtained by either of these methods may be converted immediately into sulphate, hydro-chlorate, and other saline compounds of morphia, merely by digestion of the crystals reduced to powder, in warm acidulous menstrua. The powdered crystals should considerably exceed the solvent power of the menstruum, which, when charged with morphia, should be evaporated after having been decanted from the portion of crystals undissolved. A small portion of alcohol added, when the evaporation is nearly finished, favours the production of purer crystals."

The following is the process of Mr. Blondeau for obtaining morphia by fermentation from opium. Take pure opium and subject it to the action of twice its weight of warm water; to this add the yeast of beer, and suffer the fermentation to proceed until it ceases. Filter through linen, and wash the residuum; mix the liquors, and add to them a sufficiency of ammonia to precipitate the morphia. Collect the precipitate, wash and treat it with water rendered acidulous with hydro-chloric acid; filter and evaporate. The hydro-chlorate is procured in a coloured mass which treat with water and animal charcoal. Decompose this salt with ammonia, and crystals will form of a yellowish colour.

Mr. Blondeau states that he has obtained from one French

pound, (7722 troy grains,) of the best opium, from thirteen to fourteen French drachms, (819 to 882 troy grains,) of coloured morphia. Dr. Staples obtained from 7000 troy grains, 1080 grains of the first precipitate, and 900 grains of the purified morphia. See Nos. I. and II. of the Journal of the Philadelphia College of Pharmacy, second series.]

Th. E. Morphia exercises upon the economy a very powerful narcotic influence. It is the most active principle of opium, of which, Mr. Magendie says, it possesses all the advantages, without having its bad results. This is applicable principally to the salts it forms with acids; for, on account of its being very little soluble, it is seldom used except in this state of combination.

Acetate of Morphia. *Morphiæ acetas.* Neutral salt obtained from the combination of acetic acid and morphia.

P. P. White, inodorous, of a very bitter taste, and extremely deliquescent. It crystallizes with difficulty. It may, however, be obtained in crystalline masses formed of needles disposed in divergent rays.

C. P. Very soluble in water; heated to a considerable degree it decomposes, and emits a peculiar and very disagreeable smell, and treated with diluted sulphuric acid, it produces vapours of acetic acid. It possesses otherwise all the other properties of morphia.

Prep. In order to obtain the acetate crystallized, the acid must be combined directly with the base, and the evaporation performed with a slow heat; in this state it is dried with caution and reduced to powder.

Th. E. It possesses the same virtues as morphia, but acts with more promptness and energy on account of its solubility. It is now very much used in all the cases in which opium and its preparations are indicated.

D. & M. of Adm. Gr. ¼ to gr. ij. or iij. in 24 hours, in pills, mixture, &c.——*Solution of acetate of morphia*, F. M. (Acetate of morphia, 1; distilled water, 36; alcohol, 5; acetic acid, a few drops; ʒss. contains gr. j. of acetate.) Dose, from gut. vj. to xxiv.——*Syrup of morphia*, F. M. (Acetate of morphia, 1; simple syrup, 1304; ʒj. contains gr. ¼ of acetate.) Dose, from cochl. min. j. to ij. every three hours, or ʒj. in a mixture.

Sulphate of Morphia. *Morphiæ sulphas.* Neutral saline substance, resulting from the combination of diluted sulphuric acid with morphia.

P. P. It is white, crystallizes in needles, forming silky flakes; it is inodorous, of a very bitter taste, and unalterable in the air.

C. P. It is composed of 100 of morphia and 12.16 of sulphuric acid, besides the water of crystallization. It dissolves in twice its weight of boiling distilled water. It is easily decomposed by the action of fire, and acquires a violet-red colour. It is capable

of combining with a small additional quantity of acid, which forms a very soluble bi-sulphate.

Incomp. Subst. Most metallic oxides.

Prep. Treat directly the morphia with diluted sulphuric acid and permit the liquor to crystallize.

Th. E. The same as that of the acetate, to which it is now generally preferred on account of its composition not being liable to vary.

D. & M. of Adm. Gr. ¼ to j. in pills, or in a mixture.——*Syrup of sulphate of morphia*, F. M. (Sulphate of morphia, 1; syrup, 2304; ℥j contains gr. ¼ of sulphate.) Dose, from ℥ss. to ℥j.

Citrate of Morphia, *Morphiæ citras*, the use of which has been recommended by Dr. Porter, of Bristol, and which he was far from using in a pure state, in the way he prepared it, by treating opium with citric acid, by simple maceration, and has not been until now studied with any degree of interest. Dr. Porter, as well as several American practitioners, believe that this compound acts more speedily and powerfully, but not in so permanent a manner as opium. Dr. Magendie, in the last edition of his formulary, proposes to combine directly morphia with citric acid, in order to form a *solution of citrate of morphia*, or *Pink drops*, (morphia, 2; crystallized citric acid, 1; distilled water, 72; tincture of cochineal, 18,) of which preparation, from six to eighteen drops may be administered in the course of one day.*

The Hydro-chlorate and Nitrate of Morphia are likewise very soluble and bitter. They have not been as yet employed, but it would be worth while to try them.

Narcotin, or Derosne's Salt, a proximate principle contained in opium, is white, in silky needles, insipid, and inodorous. It is neither acid nor alkaline, and does not form salts with acids, which dissolve it simply, as well as the oils and ethers. It is on the contrary, almost insoluble in water, and requires 100 of cold alcohol, and 24 of this menstruum when boiling, to dissolve it. According to Dr. Bally's experiments, this substance has little action on the economy; Orfila, on the contrary, believes that it exercises a stupifying and deleterious influence, whilst Dr. Magendie thinks it acts as a powerful excitant. Notwithstanding these various and contradictory opinions, narcotin is not used as a remedy.

* [We have obtained the citrate of morphia in beautiful four-sided prismatic crystals, perfectly soluble in water. We believe this salt to be preferable to the acetate, on account of the fixity of the citric acid; and because it appears to dissolve more easily than any of the other combinations or salts of morphia.]—Am. Eds.

[Prickly Poppy. *Argemone mexicana*, Lin. A Mexican herbaceous and annual plant, introduced into some gardens in this country.

B. C. Stem straight, cylindrical, furnished with small prickles, from twelve to eighteen inches high; leaves alternate, amplexicaule, runcinate on the edges, with white streaks along their nerves, which are furnished with prickles; flowers terminal, solitary, and of a yellow colour; capsule six-sided, and containing some black seeds.

Th. E. This plant is abundantly furnished with a lactescent and glutinous juice, which on exposure to the air acquires a fine bright yellow colour. This inspissated juice is said to be very efficacious in small doses, in dropsies, jaundice, and cutaneous diseases, and is used as a detersive in diseases of the eye. The infusion is diaphoretic and resolutive. The capsules are a stronger narcotic than opium, and are frequently administered in the West Indies in diarrhœa and dysentery. The plant is there called yellow thistle.

This plant may be easily cultivated in our gardens, and deserves a particular notice.]

[Blood Root. Puccoon. *Sanguinaria canadensis*, Lin. A perennial plant peculiar to North America. P. U. The root and seeds.

B. C. Scape uniflore, proceeding from one end of the root, rising perpendicularly to the height of six to eight inches; one solitary leaf, radical, reniform, and lobed, attaining its full growth only after the blossoming of the plant; calix two-leaved, deciduous; petals eight; stigma sessile, two-grooved; capsule superior, oblong, one-celled, two-valved; apex attenuated; receptacles two, filiform, marginal; seeds small, round, and black.

P. P. Root tuberous, of the size of the finger, two or three inches long, with a curvature at each end; several roots connected together by numerous fasciculate fibres originating from the main body; brown externally; when cut, a juice of a reddish-orange colour is abundantly discharged through numerous pores. The dried root is wrinkled, having considerably diminished in size; its fracture is resinous and of a deep red colour. Its taste is bitter, acrid, and pungent, leaving an impression in the fauces for some time after it has been chewed.

C. P. According to Dr. Fitzgerald Bird's analysis, it appears to contain cinchonia, extractive matter, a gum resin, a resin and gallic acid in a state of combination. The colouring principle of this root resides chiefly in its resinous parts, the alcoholic solution being always more than twice as highly-coloured as the aqueous. Dr. Dana of New York obtained from it a peculiar alkaline substance, which has been called *sanguinara*.

Th. E. We have copied the following paragraphs from Dr.

Eberle's Materia Medica, as fully exemplifying all the properties of the valuable plant under examination:—"The medicinal properties of the sanguinaria have been variously represented, and its powers do not appear to be, as yet, well understood. Dr. Bigelow considers this root as an acrid narcotic. Dr. Bird says that its medicinal properties are in *every respect* similar to those which characterize the cinchona officinalis; and the late Dr. Barton valued it chiefly for its emetic and expectorant powers. Its properties are certainly very peculiar, being capable of producing tonic, narcotic, stimulant, or emetic effects, according to the dose and form in which it is administered. Taken in a large dose it produces nausea, heat in the stomach, faintness, and often vertigo and indistinct vision, and finally emesis. These effects are produced by doses of from eight to twenty grains; in smaller doses its effects on the pulse are analogous to those of digitalis. I have noticed this effect in several instances. Given in such doses as are not sufficient to produce nausea, it acts as a stimulant tonic. Applied in the form of powder to fungous flesh, it evinces pretty active escharotic properties.

From the concurrent testimony of a number of eminent practitioners, the sanguinaria appears to be entitled to very considerable attention as an article of the materia medica. Professor Francis, of New York, in a very interesting paper on the medical properties of this plant, states that he had used it 'with essential benefit in a long protracted and distressing affection of the chest. The patient had laboured under repeated attacks of pneumonia, and notwithstanding a very active treatment, had suffered by hæmorrhage from the lungs. The consequences were, much constitutional debility, and habitual returns of spasmodic dyspnœa, similar to those of pertussis. The tincture of the sanguinaria, to the amount of twenty drops, three times a day, has obviated the most formidable symptoms, and given strength and vigour to the constitution.' Dr. Ives, of New Haven, also speaks very favourably of its remediate powers in diseases of the lungs and liver. 'In plethoric constitutions,' he observes, 'when respiration is very difficult, the cheeks and hands become livid, the pulse full, soft, vibrating, and easily compressed, the blood root has done more to obviate the symptoms and remove the disease, than any remedy he has used.' It should be given in large doses in cases of this kind, and repeated until it produces vomiting. He also recommends it as highly useful in influenza, hooping-cough, and croup. In this latter disease it must be given so as to produce vomiting.

Dr. Francis, in the paper which I have already quoted, states that he has used this remedy with advantage in a formidable case of acute rheumatism occurring in a gouty habit, the patient hav-

ing been previously prepared by copious blood-letting, cathartics, and sudorifics. The patient took thirty drops of the saturated alcoholic solution three times a day. Dr. Macbride, of Charleston, S. C. in a letter to Dr. Bigelow, states that he has found it useful in hydrothorax, 'given in doses of sixty drops three times a day, and increased until nausea followed each dose.' My own experience with this article has been limited. I have, however, administered the saturated tincture in doses of about twenty drops a day, with unequivocal benefit in an asthmatic affection. In this instance the pulse became reduced about ten strokes in a minute. In another case of weakness of the breast, and copious mucous expectoration, it produced a similar diminution of the action of the pulse, but its good effects were not so conspicuous as in the former instance.

As an external remedy, the powdered root has been found very beneficial in ill-conditioned ulcers with callous edges, and an ichorous discharge. Professor Smith, of Hanover, New Hampshire, states that he has cured several polypi of the soft kind, by using it as snuff. I once employed it a long time in a case of this kind, and although it diminished the polypus very considerably for a time, I could not succeed in obtaining any permanent advantage by its use.

Dr. Francis very judiciously observes, that in cases of high general excitement, or in active local inflammation, its employment cannot but prove injurious; for, whatever may be its ulterior effects, it is always actively stimulant in its primary operation." Dr. Tully, who has written a very long communication on sanguinaria canadensis, thinks that, besides acting as an emetic, this root decidedly possesses deobstruent properties, without producing emesis or catharsis.]

[Sanguinara, according to Dr. Dana, is uncrystallizable, of a fine yellowish-red colour, forming coloured salts with acids.

Prep. It is obtained by digesting the bruised root of sanguinaria in a limited portion of cold water slightly acidulated with sulphuric acid, and repeating the digestion in a similar quantity of water, still less acidulated. After uniting the liquors, they are filtered, and a sufficient quantity of liquid ammonia is added. The precipitate formed is separated, washed with water slightly charged with ammonia, and afterwards digested in alcohol. All the soluble portion of the precipitate is then concentrated by distillation or evaporation, and thrown into pure water, in which the sanguinara precipitates.

Dr. Staples, who repeated the above process of Dr. Dana, found it to yield a very small proportion of sanguinara; but, by the following one, he obtained a much larger and more satisfactory pro-

duct:—Digest the sanguinaria in alcohol, as long as its peculiar colour is given to the menstruum; filter and throw in sub-acetate of lead; separate the copious precipitate by filtration, and pass through the clear tincture a current of hydro-sulphuric acid gas; remove the alcohol by distillation, and precipitate with ammonia. From this precipitate, digested in a weak solution of sulphuric acid, Dr. S. obtained a crystallized *sulphate of sanguinara*, of a beautiful orange colour.

Dr. Tully, who gave the formula of Dr. Dana, for the preparation of sanguinara, does not mention whether this principle has ever been used in the practice of medicine.]

Family Solaneæ.

Belladonna. Deadly Nightshade. *Belladonnæ herba. Atropa belladonna*, Lin. A perennial plant; growing in shady places, along old walls and rubbish, and flowering from June to August. P. U. The whole plant.

B. C. Stem herbaceous, straight, ramose, cylindrical, hairy, from two to three feet high; leaves oval, acute, large, of a deep green colour; flowers large, of a tarnished red, solitary, hanging, and axillary; calix with five deep and acute divisions; corolla subcampanulate, three stamina, with ovoid anthers; fruit, a round bi-celled berry, green at first, then red, and lastly almost black.

P. P. All the parts of this plant possess a virose smell, and a nauseous and slightly acrid taste.

C. P. According to Brande, it contains a bi-malate of *atropia*, 1.51; gum, 8.33; starch, 1.25; resinous chlorophyllin, 5.84; lignin 13.7; a matter analogous to osmazome, some salts, &c. Water and alcohol take up its active principles.

Atropia, active principle of belladonna, is an alkaloid substance, white, shining, crystallizing in long needles, tasteless, inodorous, insoluble in cold water or alcohol, slightly soluble in these menstrua when warm, and capable of combining with acids and forming crystallizable bi-salts. It has not as yet been exhibited alone, and it seems, according to Dr. Runge's experiments, to possess the same virtues as belladonna.

Th. E. In large doses, belladonna acts like the narcotico-acrid poisons, and quickly causes death. In small doses it irritates the stomach, and after having been absorbed, it produces heaviness of the head, vertigo, dilatation of the pupils, irregularity of the pulse, sweats, &c. which effects are followed with prostration of strength and a state of somnolency which is of a shorter or longer duration.

The employment of this substance has been highly recommended in the treatment of hooping-cough, in convulsive coughs, in tic douloureux of the face and in other nervous affections; in

dropsy, icterus, &c. Several German physicians assert, that it may be used as a preservative against scarlatina, and have published several observations on epidemics of this disease, during which, children who were in the habit of making use of this substance, communicated daily with those who were suffering under it, without, however, being affected by it; but before crediting this incomprehensible property, it would be well to obtain a much greater mass of facts than we now possess. Dr. W. Chevallier, has used it successfully as an external application in certain acute and chronic inflammations of the skin, in white swelling of the articulations, rheumatic affections, &c. Finally, it has been usefully employed to dilate the iris in consequence of the action it exercises upon the contraction of the pupil, especially after the operation for cataract. Several surgeons exhibit it as poultices over the eye in order to obtain a dilatation of the pupil previously to performing the operation, and Dr. Chaussier has recommended its exhibition to obtain the relaxation of the neck of the uterus, in cases of spasmodic rigidity of this organ when it becomes an obstacle to delivery.

D. & M. of Adm. *Powder*, gr. j. to xij. in pills. *Infusion*, ℈j. in ℥viij. of boiling water, of which ℥j. to ℥ij. are given daily.——*Extractum belladonnæ*, U. S., P., L., A., Den., Pol., Pr., B. Dose, from gr. ½ to iv. in pills.

Externally. Enema of belladonna, Paris H. (Belladonna leaves, gr. xij.; boiling water, ℥vj.)——*Belladonna salve*, Paris H. (Extract of belladonna ʒij.; distilled water and axungia, āā. ʒij.) *Belladonna ointment*, W. Chevallier, (Extract of belladonna and simple cerate, āā. p. e.)

Mandrake Root. *Atropa mandragora*, Lin. A plant nearly related to the preceding, possesses the same properties. It was formerly frequently used in a great number of diseases; it is now exhibited externally only, and even then, it is very seldom used as a poultice, on scirrhous tumours.

Stramonium. Thorn-apple. Jamestown-weed. *Stramonii herba. Datura stramonium*, Lin. An annual plant, growing abundantly in uncultivated places all over the United States and Europe; it is thought a native of South America, or Asia. It blossoms in June. P. U. The whole plant.

B. C. Stem herbaceous, cylindrical, ramose, from two to four feet high; leaves large, oval, sinuate and petiolated; flowers white, very large, solitary; calix tubular, elongate, caducous, marked with five prominent ribs; corolla very large, infundibuliform, tube five-angular, ovary pyramidal, with four polyspermous cells; stigma horse-shoe like; fruit an ovoid capsule, furnished with thorns, containing some brown, reniform and rough seeds.

P. P. Its smell is virose and nauseous, and its taste acrid and bitter.

C. P. Promnitz found the green plant to contain, gummous extractive matter, 0.58; extractive, 0.6; fecula, 0.64; albumen,

0.15; resin, 0.12; salts, 0.23; lignous fibres, 3.15. Mr. Brande, in his analysis of the seeds, discovered an alkaloid proximate principle, combined with malic acid, which he named *daturia*. Water and alcohol take up, by ebullition, the proximate principles of this plant.

Daturia, which, according to Messrs. Kirchoff and Engelbart, seems to be the active principle of stramonium, is white, pulverulent; almost insoluble in cold water and alcohol, but soluble in the latter menstruum when boiling, and capable of combining with acids and forming soluble salts. It has not as yet been used in medicine.

Th. E. The action of stramonium upon the animal economy, is similar to that of belladonna. Its employment has been recommended as antispasmodic, in the treatment of convulsions, neuralgiæ, rheumatism, &c.; but it is very seldom used at present. It is an uncertain and dangerous remedy.*

D. & M. of Adm. Gr. j. to xx. gradually.——*Extractum stramonii*, F., R. *Extract*, Paris H. Dose, from gr. j. to iv. in pills.

Externally. Decoction, in lotions, fomentations, &c.——*Tinctura stramonii*, U. S. (Bruised seeds of stramonium, ℥ij.; diluted alcohol, Oj.)

Tobacco. *Nicotianæ folia. Nicotiana tabacum*, Lin. A plant indigenous to America, and cultivated in Europe. P. U. The leaves.

B. C. Stem straight, ramose and viscous, from two to three feet high; leaves alternate, pubescent, very large, oval and sessile; flowers in panicles at the extremity of the branches, large; calix urceolate; corolla, infundibuliform, regular, five stamina; ovary ovoid, with two polyspermous cells; fruit an ovoid and bivalve capsule.

P. P. The tobacco leaves, in their green state, have a virose smell and an acrid and aromatic taste. Such as they are found in commerce, they are dry and have experienced a beginning of fermentation, which to a certain degree changes their nature; their colour is then more or less brown, their odour aromatic and penetrating and their taste acrid.

C. P. According to Vauquelin, the juice obtained from the fresh leaves contains a red animal matter, soluble in water and alcohol; a peculiar acrid principle, soluble in water and alcohol, volatile, colourless, and apparently the active principle; a green resin, albumen, lignous fibres, acetic acid and some salts. The tobacco of commerce contains besides some carbonate of ammonia. Water and alcohol take up easily its active principles.

Th. E. Administered internally, tobacco irritates powerfully

* [Poultices made with this plant are, by American surgeons, generally preferred even to belladonna, to dilate the pupil before operating for cataract, &c.]—Am. Eds.

the surface of the stomach, and produces nausea, vomiting, and even bloody evacuations. Its absorption is followed by heaviness of the head, tremor, somnolency, and other phenomena resulting from its powerful narcotic action on the nervous system. It is capable even of inducing the acceleration of the pulse, profuse sweats, the increase of the secretion of urine, and finally, in large doses it acts in the violent manner of the narcotico-acrid poisons.

The use of tobacco as an errhine and a masticatory is too generally known to require being mentioned in this place. Some physicians have exhibited it as an emetic, but this mode of exhibiting it, is not without danger. Several preparations of tobacco are used in chronic catarrhs in individuals of a lymphatic temperament. It is likewise recommended in the treatment of dropsy. The injections of tobacco are often administered with success in cases of asphyxia, in strangulated hernia, or to destroy ascarides.

Finally, it is administered externally in psora, scald head, &c. Dr. O'Beirne of Dublin has obtained very good results from its employment in fomentations, and in cases of dysentery; and it appears that in the West India Islands they have succeeded in curing tetanus by means of baths prepared with a decoction of fresh tobacco leaves. [An empyreumatic oil of tobacco, has, for several years past been used by our practitioners, as an external application, mixed with ointments, in indolent tumours, &c. This oil possesses undoubtedly very energetic narcotic effects, and is said to be a virulent poison.]

D. & M. of Adm. *Internally. Infusion.* ℥j. to ℥ij in boiling water, ℥vj. for two doses, as an emetic, very seldom used.——*Infusum nicotianæ Fowleri*, B. (Virginia tobacco, ℥j.; boiling water, ℥xij.; alcohol, ℥ij.) Dose, from gut. xxx. to lx. twice a day.——*Vinum nicotianæ tabaci*, E. (Tobacco, 1; Spanish wine, 12.) Dose, from gut x. to xxx. in a proper menstruum.——*Extractum nicotianæ*, F. Dose, from gr. j. to gr. iv.

Externally. Infusum tabaci, L. (Tobacco, 1; boiling water, 128.) *In injections. Enema of tobacco*, Paris H. (Tobacco, ℥j.; boiling water, ℔ij.; tartar emetic, gr. xij.——*Fomentation*, Paris H. (Tobacco, ℥ij.; boiling water, ℔j.)——*Oil of tobacco*, P. (Tobacco 1; olive oil, 2.)——*Ceratum tabacinum*, B. (Expressed juice of tobacco and wax, āā. 2; resin 1; oil of myrrh, q. s.) In frictions on slightly inflammatory tetters.——*Epithem of tobacco*, Dr. Paris. (Tobacco leaves, ℥j.; water, q. s.) To be applied on the epigastrium as an emetic.

Henbane. *Hyosciami herba et semina. Hyosciamus niger*, Lin. An annual plant, very common in uncultivated places. P. U. The whole plant and seeds.

B. C. Stem ramose, hairy, from one to two feet high; leaves alternate, large, oval, deeply sinuate on the borders, hairy, and viscous; flowers yellowish, with streaks of a vinous red, almost sessile, in unilateral spikes; calix tubular, subcampanulate; corolla infundibuliform; stamina inclined; fruit, an elongated and bilocular capsule, opening at the summit, and containing tubercular seeds.

P. P. The colour of this plant, when fresh, is of a dull green;

its odour is fetid and nauseous, and its taste sweetish, and afterwards slightly acrid.

C. P. Henbane contains resin, mucilage, extractive, malic acid, and some salts. Mr. Brande, in his analysis of the seeds, has discovered an alkaloid proximate principle, combined with malic acid, which has been called *hyosciama*, and is considered to be the active principle of this plant.

Hyosciama is white, crystallizes in long prisms, unalterable at a high temperature, insoluble in water, and forming soluble salts with sulphuric and nitric acids. It has not as yet been employed in practice, but ought to be carefully studied, as deserving a very particular attention.

Th. E. In large doses, hyosciamus acts like the substances we have just now treated, that is, like narcotico-acrid poisons. In smaller doses, its action is particularly felt by the brain, and produces cephalalgia, vertigo, hallucinations, a sort of merry intoxication; sometimes somnolency, at other times, on the contrary, it produces a very great agitation. Should this excitation be carried so far as to produce a cerebral congestion, a new series of symptoms is then experienced, such as numbness of the limbs, prostration of strength, irregularity in the pulse, &c. According to Drs. Fouquier and Ratier, this remedy does not induce sleep, and its virtues have been too highly spoken of. They assert having administered it under different forms, in very considerable doses, producing only very slight effects. However, it has been recommended in the treatment of neuralgia, epilepsy, hypochondria, nervous coughs, colica pictonum, tremor of the limbs, &c. Externally, the henbane leaves are applied as a poultice on cancerous tumours, in order to soothe the pain; they are used in lotions, fomentations, baths, &c.

D. & M. of Adm. *Internally. Powder*, seldom, gr. j. to ℈j.——*Emulsio seminis hyosciami*, B. (Henbane seeds, 1; bitter almonds, 6; water, q. s.) Dose, cochl. j. every two hours.——*Extractum hyosciami*, P., L., E., D., Pr., Pol., Den., F., R., B. Dose, from gr. j. to ℈j. in pills.——*Alcoholic extract*, Paris H. ——*Dr. Paris's hyosciamus pills*, (Extract of henbane, ℈j.; camphor, gr. viij.; for twelve pills.) Dose, No. iij. every night.——*Tinctura hyosciami*, U. S., L., E., D. (Henbane, 1; alcohol, 8.)—Pr., Pol. (Henbane, 1; alcohol, 4; distilled water, 2.) Dose, from ʒss. to ʒj.

Externally. Poultices. Decoction, in baths; lotions, fomentations.——*Lotio hyosciami*, Guy's H. (Extract of hyosciamus, ʒj.; water, ʒiij.)——*Anodyne and resolvent liniment*, Paris H. (Extract of hyosciamus, ʒss.; medicinal soap, ʒij.; lilly oil, ʒiv.)——*Oleum coctum hyosciami*, P., Pol., Pr. (Henbane, 1; olive oil, 2.)——*Emplastrum hyosciami*, Pr., Pol., B. (Hyosciamus and wax, āā. 2; resin and olive oil, āā. 1.)

White and Yellow-Henbane. *Hyosciamus albus* and *H. aureus*, Lin., have the same properties as the preceding, but act

with less energy. Mr. Chevallier prepares a *syrup of white-henbane*, (Dry extract of white-henbane, 1; simple syrup, 576; every ounce contains 1 gr. of extract of hyosciamus,) of which from ℥ss. to j. may be administered at once.

Family Synantherеæ.

Chicoraceæ.

Strong-Scented Lettuce. *Lactucæ virosæ herba. Lactuca virosa*, Lin. A biennial plant growing on the sides of roads, and flowering in July. P. U. The whole plant.

B. C. Stem glaucous, straight, ramose at top, from three to four feet high; leaves semi-amplexicaule, with thorny nerves underneath; flowers yellow, in terminal panicles; involucre cylindrical, imbricate; receptacle naked, plane; florets hermaphrodite; fruit compressed, and furnished with a silky pappus.

P. P. The whole plant contains a very abundant milky juice, and possesses a virose and disagreeable smell, and an acrid and bitter taste.

C. P. The strong-scented lettuce contains a bitter principle, a peculiar acid, analogous to oxalic acid, resin, caoutchouc, wax, gum, albumen and some salts.

Th. E. This plant acts upon the nervous system in a manner similar to hyosciamus and the other solaneæ; this is the reason why it may be substituted in many cases for opium. In sufficiently large doses, it produces nausea, alvine evacuations, and often, especially in cases of œdema or dropsy, a remarkable increase in the secretion of urine. It has been exhibited with success in ascites, engorgements of the abdominal viscera, jaundice, &c. and as a substitute for opium, in neuroses.

D. & M. of Adm. *Extract*, P. *Succus spissatus luctucæ virosæ*, E.—*Extractum luctucæ virosæ*, R. Dose, from gr. ij. to ℈j. and even ʒj., in pills.

Thridace. *Thridax* seu *lactucarium.* Juice furnished, during the time of fructification, by the Garden Lettuce, *Lactuca sativa*, Lin. An annual plant cultivated in gardens.

B. C. Leaves oval, entire, very large; flowers yellow, smaller than those of the preceding.

P. P. Thridace is in the form of dry extract, attracting powerfully the moisture of the air, of a brown colour, of a taste and odour resembling those of opium.

C. P. According to Schrader's analysis, this substance contains a peculiar resin, 34.2; a bitter principle, 36.3; gum, 3.5; vegetable fibres and salts, 26. Mr. Caventou has experimented upon thridace, and found no principle analogous to morphia, but some malic acid, lime, &c.

Prep. Incisions are made in the stem of the lettuce, with a sil-

ver blade, the milky juice exudes rapidly and concretes. The stem is afterwards cut in pieces, and pounded in a marble mortar, and the juice expressed from it, then evaporated to the consistence of an extract and mixed with the first product.

Th. E. Thridace, which was first used by Dr. Coxe, of Philadelphia, and afterwards by Dr. Duncan, under the name of *lactucarium*, as a substitute for opium, has been of late employed and studied by Dr. Francois. From the observations of this distinguished physician, this remedy seems to act by diminishing the frequency of the pulse and animal heat. It possesses, in a remarkable degree, the property of producing sleep, without ever causing narcotism, nor acting as a stimulant, as opium does. It may consequently be administered in cases of acute inflammation. Dr. Francois has exhibited it in a number of cases, as a promoter of sleep, and he asserts having obtained from its employment the most happy effects.

D. & M. of Adm. Gr. ij. to iv. and gradually to x. and even xv., in pills.

Family Scrophulariæ.

Purple Digitalis. Fox Glove. *Digitalis folia. Digitalis purpurea*, Lin. A biennial plant, indigenous to Europe, and flowering in June and July. P. U. The leaves.

B. C. Stem herbaceous, simple, straight, hairy, from two to three feet high; radical leaves very large, oval; whitish, hairy on both sides; flowers of a deep purple, hanging in a terminal and unilateral spike; calix persistent, with five deep divisions; corolla irregular, campanulate, spotted internally with black dots; fruit, an ovoid, acuminate and bivalve capsule.

P. P. The leaves of this plant have a slight virose smell, and an acrid and unpleasant taste.

C. P. According to the analysis of Messrs. Destouches and Bidault de Villiers, digitalis contains an aqueous brown extract, an alcoholic extract, an oily green matter, salts, oxide of iron, &c. Mr. Leroyer, of Geneva, has discovered in it a peculiar substance which he considers as the active principle of this plant, and which he calls *Digitalin;* but according to Mr. Dulong, this substance is not of an alkaline nature, but is simply a compound of several other substances, all soluble in ether.

Digitalin, such as Mr. Leroyer obtained it, is brown, of the consistence of pitch, extremely delinquescent, slightly alkaline, of an intense bitterness, and almost uncrystallizable. This substance, whatever its nature may be, possesses in the highest degree the virtues of digitalis, as has been proved by the experiments Dr. Prevost made upon several species of animals. It has not as yet been used in the practice of medicine.

Incomp. Subst. Sulphate of iron, infusion of bark and acetate of lead.

Th. E. In large doses, digitalis irritates powerfully the gastro-intestinal surface and produces nausea, vomiting, and very abundant alvine evacuations. Its action is afterwards spent upon the nervous system and produces vertigo, dimness of sight, delirium, convulsions or a general debility, and finally, death. When it is administered in small doses, nausea and slight colics are the only effects observed, and it does not always impair the appetite. As to the general effects, they manifest themselves by a considerable increase of the urinary secretion, and by an acceleration of the circulation, soon followed by a more or less considerable diminution of the pulse, &c.; and should its employment be continued in this dose, the patient falls by degrees into a profound prostration, and experiences incessant nausea, heaviness in the head, and a considerable muscular debility. Administered in small doses, and continued for some time, digitalis may occasionally increase at first the number of arterial pulsations; but in general, this substance diminishes it gradually. We have observed instances in which the pulse under its influence was reduced from seventy pulsations per minute to thirty, and this sedative action often continues for some time after its exhibition has been stopped. Most authors still ascribe to digitalis the power of diminishing morbid secretions, and of rendering absorption more active.

Digitalis is of a frequent medicinal employment. It is principally administered as an anodyne in nervous palpitations, hemoptysis, asthma, nervous coughs, and in the last stage of pulmonary catarrhs. In the treatment of anasarca and dropsy, advantages have been obtained from its powerful diuretic action, and in consequence of the influence it appears to have on absorption. It has likewise been recommended in scrofulous diseases. Finally, the Italian physicians consider it as a valuable contra-stimulant, and exhibit it in large doses in inflammatory diseases, principally in acute peripneumonia. The favourable effects they have obtained from its employment in these cases is probably owing to the diminution of the activity of the circulation which it produces.

D. & M. of Adm. Powder, gr. ij. to xij. and gradually ℈j.; even ʒss., in pills. Infusion, ʒj. to ʒiij. to two pounds of boiling water.——*Infusum digitalis*, U. S., L., E. (Digitalis, 1; alcohol of cinnamon, 8; boiling water, 64.) Dose, ʒss. to ʒj. ——*Decoctum digitalis*, D. (Digitalis, 1; water, 80;) same doses.——*Tinctura digitalis*, U. S., P., L., E., D., A. (Digitalis, 1; alcohol, 8.)—Pol., F., Pr. (Digitalis, 1; alcohol, 4; distilled water, 2.) Gut. x. to ℈j. and more in a mixture. ——*Tinctura digitalis ætherea*, P., Pol. (Digitalis, 1; sulphuric ether, 8.) Gut. x. to xx.——*Diuretic mixture*, Paris H. (Tincture of digitalis, ʒj.; infusion of tea, ʒiv.; oxymel of squills, ʒj.)

Externally. Decoction, in injections, fomentations, lotions.——*Fomentum digitalis*, Gut's H. (Digitalis, ʒj.; boiling water, ℔ij.)

Family Ranunculaceæ.

[Black Snake-root. *Cimicifuga serpentaria*, Pursh. *Actea racemosa*, Lin. *Botrophis serpentaria*, Rafinesque. A perennial native plant, very common in open woods, rich ground, and on the sides of hills. P. U. The root.

B. C. Stem simple, straight, from three to six feet high, smooth, angular, furrowed; leaves, few and alternate; one, nearly radical, is very large, decomposed, three-pinnate; the upper one is bi-pinnate; flowers in a terminal raceme, from one to three feet long; calix, four or five-leaved, white; petals, from four to eight, thickish, sometimes wanting; stamina numerous; pistils from one to five; capsule oblong, many-seeded; seeds squamous.

P. P. Root blackish externally, thick, with long fibres, of an odour rather unpleasant; taste nauseous, bitter, and astringent.

C. P. According to Dr. G. W. Mears's analysis, it seems to contain tannin, extractive matter, a bitter principle, gallic acid, resin, gum and starch.

Th. E. The first account we have of the exhibition of this root as a remedial substance, is given by the late Dr. Barton, who considered it a valuable astringent.

Dr. Garden, of Virginia, may be said, however, to have been the first who particularly drew the attention of the profession to the properties of the cimicifuga in phthisis pulmonalis and other affections; and he speaks of its beneficial effects in the highest terms. He has shown that this medicine, like digitalis, affected the brain, and operated powerfully upon the secretory organs and absorbent system. When exhibited in large doses, it prostrates to a distressing degree, producing nausea, vertigo, anxiety, great restlessness, pains in the extremities, &c. These effects are, however, temporary.

Dr. N. Chapman states: "Besides the astringent property of this root, which I have never been able to discover in any degree, it is expectorant, narcotic, antispasmodic, diaphoretic, and, in a large dose, emetic. Given so as to affect sensibly the system, we find, first, some nausea, followed by greater freedom of expectoration, and more or less relaxation of the surface, with slight nervous tremors, and vertiginous affections. The pulse, during this state, is considerably lowered, and is apt to remain so for some time." He moreover adds: "It is alleged, in consumption, to lessen the frequency of the pulse, to allay the cough, to quiet the mobility of the system, and particularly to subdue hectic fever. How far this is true, my own experience does not enable me to say."

Dr. G. W. Mears has tried this substance on himself. He took at first thirty grains of the pulverized root, and an hour afterwards, his pulse, which was seventy strokes to a minute, full

and soft, had undergone no change, and he perceived no particular effect; an hour after this he took every twenty minutes a teaspoonful of the saturated tincture, and after taking three teaspoonsful, the pulse rose to 73, with much head-ache, drowsiness, sleepiness, and perspiration; and soon after, this tincture produced a very distressing pain in the head, giddiness, flushed countenance, &c., and the pulse had rose to 82 about four hours after the first dose. Soon after he felt much uneasiness at the stomach, with violent efforts to vomit. These symptoms in a few hours subsided, leaving only some pain in the head, and the pulse fell below 70. He concludes by saying, that it may be inferred from this experiment that this plant is possessed of considerable narcotic power, and that it is also a very valuable diaphoretic.

Dr. M. has published* a number of cases tending to prove its great efficacy and utility in catarrhal affections generally, rheumatism and violent coughs; and that it is also a very valuable astringent in bowel complaints of children.

D. & M. of Adm. *Internally.* Pulverized root, from grs. 6 to 30.——*Tincture of black snake-root,* from gut. 20 to 30, several times a day.——*As an astringent infusion,* (Black snake-root, ℥ij.; boiling water, Oj.) A table-spoonful every two hours, or thereabout, or as a gargle any quantity.]

Hemlock. *Cicutæ majoris herba. Conium maculatum,* Lin. A biennial plant, indigenous to Europe, and naturalized in America, growing in low and damp places, and flowering in June and July. P. U. The whole plant.

B. C. Stem herbaceous, branchy, smooth, spotted with blackish dots, and from three to six feet high; leaves alternate, tri-pinnate, very large, deeply dentated; flowers white, small, in terminal umbels, composed of from ten to twelve rays; involucre with three or five leaflets; involucellum with three unilateral leaflets; petals cordiform; fruit gibbous, didymous.

P. P. The smell of the fresh plant, when rubbed with the fingers, is unpleasant, and not dissimilar to that of the urine of the cat; its taste is acrid and nauseous.

C. P. According to Mr. Brande, this plant contains a peculiar alkaloid substance, which he calls *Coniin,* a very odorous oil, albumen, resin, a colouring matter, and some salts. Ether and alcohol take up its active principles, whilst water dissolves but a small part.

Incomp. Subst. The acids considerably diminish the energy of cicuta.

Th. E. Hemlock irritates powerfully the parts with which it comes in contact, and in large doses it acts like the narcotico-acrid poisons. When absorbed, its action is principally spent on

* [Philadelphia Monthly Journal of Med. and Surg. for September, 1827.]

the brain, and it exercises, at times, a considerable sedative influence; at other times, on the contrary, it produces cephalalgia, vertigo, agitation, delirium, somnolency, and death, which seems to be preceded by cerebral congestion. In small doses, its modus operandi is nearly related to that of belladonna. It is used as a sedative in the treatment of several nervous affections, priapism, obstinate coughs, &c. It has likewise been highly recommended in cases of engorgement of the mammæ, and even in scirrhous and cancerous affections, the shooting pains of which it alleviates. It seems capable of being really useful, either internally or externally, in the treatment of certain chronic engorgements of the viscera.

D. & M. of Adm. Powder, gr. ij. to ℈j. in pills.——*Infusum conii*, Guy's H. (Cicuta and coriander, āā. ʒij.; boiling water, ʒviij.) Dose, ʒj. to ʒij. 2 or 3 times a day.——*Extractum conii*, U. S., P., L., E., D., A., Pol., Pr., B., Den. Dose, from gr. ij. to ℈ij. in pills.——*Extract prepared without fecula*, P. Dose, from gr. j. to xv.——*Depurative pills*, Paris H. (Extract of hemlock, ʒss.; opium, gr. xviij.; calomel, ʒss.; simple syrup, q. s. for 32 pills.) No. ij. to vj. ——*Stoerck's cicuta pills*, Dr. Paris, (Hemlock extract, ʒj; hemlock leaves pulverized, q. s. for two grains pills.) No. j. to iv. twice a day.)——*Mixture of the extract of cicuta*, Dr. Paris. (Extract of cicuta and of hyosciamus, āā. gr. v.; mucilage of gum arabic, ʒij.; liquid acetate of ammonia and water, āā. ʒss.; red poppy syrup, ʒj.) To take every four hours.——*Mistura conii composita*, Guy's H. (Extract of cicuta, ʒj.; sub-carbonate of soda, ʒjss.; tincture of red pepper, ʒvj.; decoction of liquorice root, ʒxi.) Dose, ʒj. to ʒij. three or four times a day.

Externally. Calming fomentations, Dr. Paris. (Hemlock, ʒj.; boiling water ℔ijss.)——*Fomentum conii compositum*, Guy's H. (Hemlock, ʒij.; Roman chamomile, ʒss.; water, ʒij.)——*Hemlock poultice*, Dr. Paris. (Hemlock, ʒij.; crumb of bread, ʒvj.; water, ℔jss.)——*Emplastrum cicutæ cum-ammoniaco*, P., R. (Hemlock, 500; hemlock oil, 32; gum ammoniac, 125; resin, 240; wax, 160; white resin, 112.)——*Emplastrum conii*, A., B., Pr., Pol. (Hemlock, wax, and resin, āā. 2; olive oil, 1.)——*Oleum cicutæ coctum*, P. (Hemlock leaves, 1; olive oil, 2.) in frictions.

[Coniin possesses the following properties, by which it may be distinguished: 1st. In contact with tincture of iodine, its solution gives rise to a reddish precipitate. 2d. Tincture of galls renders its solution brown, but causes no precipitate. 3d. It precipitates the solutions of the sulphate of mercury and muriate of zinc of a dirty yellow colour. 4th. It occasions a slight turbidness in the solutions of the carbonates of potassa and soda. 5th. It communicates a brown colour to the muriate of platinum. 6th. With the nitrates of silver and baryta, the acetates of baryta and lead, the muriate of lime, and lime-water, it yields to grayish-white precipitates.

According to Mr. Brande, this substance is obtained by digesting the leaves and stem of the fresh plant, well bruised, for several days, in alcohol; filter the solution, and evaporate to dryness; treat the alcoholic extract with water, and add to the aqueous

solution obtained, either magnesia, alumina, or the oxide of lead; evaporate this solution to dryness, and treat the dry residue with a mixture of alcohol and ether. This menstruum takes up coniin, which, by a new evaporation to dryness, is left in a pure state.

Half a grain of coniin is sufficient to kill a rabbit. The symptoms induced by it are analogous to those produced by strychnia. After death, the vessels of the head, the right auricle of the heart, the superior vena cava, and the jugular, are very much gorged with blood, while the abdominal vessels appear to be completely empty.*]

Water-hemlock. Cow-bane. *Cicuta virosa*, Lin., and the Small Cicuta, *Æthusa cynapium*, Lin., plants nearly related to the preceding, act on the economy nearly in a similar manner as hemlock. These plants were once employed, but they are now almost out of use.

[American Hemlock. Water Hemlock. Water Cow-bane. Snake Weed. *Cicuta maculata*, Lin. A North American perennial plant, growing abundantly in marshes.

B. C. Stem smooth, branched at top, from three to six feet high; lower leaves ternate, with the partitions unequally five-leaved; upper ones simply biternate; floral leaves ternate; folioles lanceolate; lateral leaflets oblique at the base; umbels axillary and terminal; seeds agreeably aromatic, nearly orbicular, compressed, ten furrowed.

This plant acts in the same manner as the narcotic poisons. It has been used of late by several practitioners as a substitute for the *Conium maculatum*. Its effects were very analogous to those of the true hemlock, but rather more powerful. A primary symptom which attended a larger dose, was nausea and vomiting.]

Family Renonculaceæ.

Aconite. Large Blue Wolfsbane. Monkhood. *Aconiti herba. Aconitum napellus*, Lin. A perennial plant, growing in the mountains of Jura and Switzerland, and flowering in the month of June. P. U. The leaves and root.

B. C. Stem herbaceous, straight, simple, from three to four feet high; leaves alternate, petiolate, seven-lobed, cut in narrow slips; flowers blue, large, in a terminal spike; calix petaloid, with five unequal divisions, the superior helmet-form; corolla, two irregular and unguiculate petals; about thirty stamina; three pistils; ovary, with a polyspermous cell; fruit, formed of three elongate capsules opening externally.

P. P. The root of aconite is napiform, blackish externally, and white internally. Its smell, as well as that of the whole plant,

* [North American Medical and Surgical Journal.]

and especially of the leaves, is feeble, but nauseous; its taste is acrid and bitter; it leaves in the mouth a sensation of heat and pungency, and a sort of numbness.

C. P. According to Mr. Pallas's analysis, this plant contains an alkaloid substance, already described by Mr. Brande, and called *aconita*, a black oily matter, a green matter analogous to that of Peruvian bark, albumen, malate, muriate and sulphate of lime, starch and lignin. Water and alcohol take up the active principles of this plant.

Aconita, which, according to Mr. Pallas, is the active principle of the plant we are just treating of, has not been until now carefully investigated; we only know that it is obtained in the form of yellow scales, transparent, of a very bitter taste, soluble in water, hardly soluble in cold alcohol, and slightly alkaline.

Th. E. Aconite, in large doses, proves a very energetic narcotico-acrid poison. Its action is more especially felt by the nervous system and the brain. It produces a sort of mental hallucination, a violent inflammation of the digestive organs, and death. In small doses, this substance seems to increase the frequency of the pulse and the activity of the renal and cutaneous secretions. It has been exhibited with advantage in the treatment of chronic rheumatism, gout, constitutional syphilis, palsy, amaurosis, and cancerous affections. Dr. Fouquier, to whom we are indebted for a number of experiments on the action of aconite, has observed that it possesses a considerable diuretic property, and he exhibited it with success in cases of dropsy.

D. & M. of Adm. *Powder.* Gr. ij. to ʒss. gradually, in pills.——*Extractum aconiti*, U. S., P., L., E., Den., Pr., Pol., A., B., R. Dose, from gr. j. to ϑj. gradually in pills.——*Tinctura aconiti*, Pr., Pol. (Aconite, 1; alcohol, 4.) Dose, from gut. x. to ϑj. in a mixture.

Several other species of this genus, such as *Aconitum anthora*, *A. cammarum*, and *A. lycoctonum*, Lin. seem to possess exactly the same properties as the above plant we have already mentioned, and would be good substitutes for it, if it were needful.

Family Rosaceæ.

[Wild Cherry Tree. *Prunus virginianus*, Lin. One of the large trees of our forests. P. U. The bark of the trunk and root.

B. C. Trunk from twenty-five to thirty feet high; leaves deciduous, oval, pointed, and dentate, of a fine shining green colour, furnished at their base with two small reddish glands; flowers white, in erect racemes, from six to eight inches long; calix inferior, five-cleft; five petals; style terminal; fruit, a black drupe, containing a nut with a prominent suture.

P. P. It has a bitter astringent taste, slightly aromatic, and similar to that of the peach kernels.

C. P. Dr. Conwell, in his dissertation on vegetable chemistry, mentions that he has obtained from this bark a new crystalline principle, which he calls *cerasia.*

Th. E. The remedial properties of this bark seem principally to depend upon the quantity of prussic acid it contains. When exhibited internally and absorbed, it causes a slight acceleration in the circulation, and induces in some individuals a soporific state. Taken for some time and in moderate doses, it acts as a tonic on the stomach, and therefore the whole economy is invigorated by it. Exhibited frequently, and in large doses, it irritates the digestive organs, and acts as a sedative on the action of the heart and the circulation generally. Dr. Eberle says that "he has several times reduced his pulse from seventy-five to fifty strokes in a minute, by copious draughts of the cold infusion taken several times during the day, and continued for twelve or fourteen days." He further adds, "this effect has not, I believe, been noticed before, but from much experience with it, I am strongly inclined to believe that we may control the action of the heart and arteries, *(circulation,)* to a considerable extent, by the use of this substance." This bark has been particularly recommended in intermittent fevers, phthisis, hectic fever, and in some instances with decided benefit. Its effects are pretty obvious, and we may easily perceive how this bark may produce this beneficial medication in cases of this nature. The infusion of wild cherry bark contains, as we have said, prussic acid, together with a bitter and an astringent principle dissolved in a considerable quantity of water, and to the combination of these remedies we must therefore ascribe the beneficial effects produced by them in phthisis and catarrhal affections. Its effects on phthisical patients are, in every respect, like those of the prussic acid. It is also used with advantage in chronic hysteria, and finally in asthma. A decoction of this bark has proved of great advantage applied as a wash to irritable and fungous ulcers.

The bark of the root is stronger than that of the trunk. The cherries have been advantageously used, as a domestic remedy, in scurvy and dysentery.

D. & M. of Adm. *Powder*, from ʒss. to ʒij. The decoction does not appear to possess much strength; the prussic acid, which appears to be its most important part, is driven off by boiling. The cold infusion, however, is an excellent preparation; ℥j. of the bark is to be infused in a pint of cold water, for twenty-four hours, and taken by wine-glassfuls every four hours.]

Cherry Laurel. *Lauro-cerasi folia. Cerasus laurocerasus*, Wild. A shrub, growing on the shores of the Black

Sea, naturalized in the south of Europe, and cultivated in almost every garden.

B. C. Trunk smooth, blackish, from fifteen to twenty-five feet high; leaves persistent, evergreen, elongate, entire, shining; flowers in axillary spikes, white, possessing a strong smell of bitter almonds; fruit, ovoid and blackish drupes, resembling the cherry called the black-heart.

P. P. The leaves, flowers, and almonds of the cherry laurel have a very strong smell of prussic acid, and a taste similar to that of the bitter almond.

C. P. The leaves of this shrub contain a considerable quantity of prussic acid, and an almost concrete essential oil, white, and very acrid. Water and alcohol dissolve their active principles.

Th. E. The modus operandi of this substance is the same as that of the prussic acid, it is only less energetic. The distilled water and essential oil are frequently employed by the Italian practitioners, who consider them as excellent contra-stimulants. Dr. Fouquier has performed a great number of experiments with this substance, to ascertain its mode of action. He asserts that he had administered the distilled water of cherry laurel, in the dose of twelve ounces, and even more, a day, without obtaining any decided effects, if we except that at times vomiting, and at others a slight gastric disturbance were produced. However, there are too many instances on record of poisoning from this substance, to consider it as inert. Some new experiments will be necessary, in order ultimately to fix medical opinion on this subject. It has been recommended in nervous affections, in cases of obstructions of the abdominal viscera, in chronic pulmonary catarrhs, and finally, in all the cases in which the employment of prussic acid is indicated.

D. & M. of Adm. *Aqua lauro-cerasi*, P., Pol., Den., B., Pr., A., R. Dose, from gut. vj. to ʒss. and more, gradually, in a mixture.——*Pectoral mixture*, Paris H. (Distilled water of cherry laurel, ʒss.; pectoral julep, ℥iv.) By spoonfuls.

Externally. Infusum lauro-cerasi, B. (Cherry laurel and honey, āā. 1; boiling water, 6.) In fomentations on cancerous ulcers.

Bitter Almonds, *Amygdalæ amaræ*, fruit of the *Amygdalus communis*, Var., Lin. possess a bitter taste, and a smell for which they are indebted to the prussic acid they contain. They act upon the economy in the same manner as the cherry laurel. Several German physicians, and particularly Dr. Hufeland, have administered them in the form of emulsion or otherwise for the cure of intermittent fevers. A *distilled water of bitter almonds*, P. is prepared, and used in the same cases as that of the cherry laurel.

The almonds of the Peach Tree, *Persica vulgaris*, De Cand.; of the Apricot Tree, *Armeniaca vulgaris*, Lam.; of the

Plumb Tree, *Prunus domestica*, Lin.; of the Cherry Tree, *Cerasus vulgaris*, Miller; Small Black Cherry Tree, *Cerasus avium*, Jussieu, &c. contain, as well as the preceding, some prussic acid, and possess, consequently, the same virtues. They are not, however, employed in the practice of medicine. It is from the bruised kernels of the small black cherries that the highly valued alcoholic liquor, called *Kirschenwasser*, (cherry water,) is obtained.

Prussic or Hydro-cyanic Acid. *Acidum hydro-cyanicum* seu *prussicum*. It exists in nature in several vegetables; but that which is employed in medicine is always the product of art.

P. P. This acid, called, in its state of purity, Gay-Lussac's prussic acid, is liquid, transparent, colourless, of a fresh taste at first, then acrid and caustic, of an extremely strong smell, similar to that of bitter almonds, and of a specific gravity of 0.70585, the temperature being at 7° Centig. (45° Fahr.)

C. P. It is composed, according to Mr. Gay-Lussac, of carbon, 44.69; nitrogen, 51.66; and hydrogen, 3.65. It is very volatile, boils at 26° 5′ Centig. (89° Fahr.) and congeals by crystallizing at 15° Centig. (59° Fahr.) By pouring a few drops on a piece of paper, a part of the acid is so readily evaporated, that the cold produced by this evaporation, is sufficient to congeal the other. Left to itself in perfectly air-tight vessels, it is decomposed very rapidly, and acquires a reddish-brown hue more or less deep. Heated to a red heat, it is decomposed, and burns in the open air with a blue flame. It is very soluble in water and alcohol; but, as it is much lighter than these menstrua, it separates easily, and rises to the surface. It reddens but slightly litmus, combines with a few salifiable bases, and forms with them hydro-cyanates.

Incomp. Subst. The mineral acids, the salts of iron, the sulphurets, chlorine, the oxides of mercury, of antimony, nitrate of silver, &c.

Prep. The anhydrous, or Gay-Lussac's hydro-cyanic acid, is obtained by treating, in a proper apparatus, the bi-cyanuret of mercury with two-thirds of its weight of hydro-chloric, or hydro-sulphuric acid; but as this pure acid is not employed in medicine, different processes have been proposed in order to obtain it diluted with a determinate proportion of water. We shall not mention that of Scheele, because it has been justly abandoned on account of the inconstancy of its results. Vauquelin's process, such as it is indicated in the codex, gives an aqueous solution containing seventeen grains of anhydrous prussic acid to the ounce, that is, one-thirty-fifth by weight. That of Robiquet's, described likewise in the codex, gives a mixture of water and prussic acid in equal parts. Finally, Dr. Magendie's process, the most certain of all, and the most generally adopted, consists in a mix-

ture of Gay-Lussac's anhydrous acid with water, in the proportion of 1 of the former, to 6 of the latter by volume, or of 8 to 5 by weight. It is this mixture Dr. Magendie calls *medicinal prussic acid;* but, as it is decomposed with a great facility, the same practitioner has recently proposed to substitute for the distilled water the same proportion of alcohol, and has called this compound, which is less liable to alter, *Alcoholized medicinal prussic acid.*

[The following process is that which is adopted at the Apothecaries' Hall of London, for obtaining the hydro-cyanic acid:—One pound of cyanuret of mercury is put into a tubulated retort, with six pints of water, and one pound of muriatic acid, specific gravity, 1.15; a capacious receiver is luted to the retort, and six pints are distilled over. The specific gravity of the product is 0.995. As this acid in its dilute state suffers partial decomposition by keeping, it should be prepared in small quantities only for pharmaceutical use, and preserved in air-tight bottles, covered with black paper, and even so, excluded from light. This acid is said to be rather more than twice as powerful as the solution obtained by Vauquelin's process. It is the preparation which has generally been exhibited in the city of Philadelphia.]

Th. E. The pure hydro-cyanic acid is the most violent poison as yet known, even in excessively small doses. A few of its particles applied upon the eye of the most vigorous dog, kill the animal instantaneously, as if struck by lightning. Diluted with water, and given in small doses, it first acts by slightly irritating the stomach, and, as a consequence of this local action, it increases the frequency of the pulse; but its stimulant effects are but evanescent; for, very soon after, the muscular sensibility and contractibility diminish in a remarkable manner. Under the influence of this remedy, the prostration of strength may even become extreme; but it is not attended with sweats or watchfulness, as it happens in the exhibition of opium. Prussic acid may, of course, be considered as a very energetic anodyne. Dr. Magendie was the first, in France, who called the attention of practitioners to this therapeutic agent. It has been administered with success in nervous and convulsive coughs, in asthma, hooping-cough, spasmodic palpitations, certain neuralgiæ, &c. In England it has been administered with success, either internally, or in lotions over the diseased parts, in several chronic cutaneous affections attended with pain, or a considerable itching. It has been likewise recommended in phthisis pulmonalis; but in such cases it is of no real advantage, except for alleviating the cough, which is so troublesome to the patient. As this medicine imprudently exhibited would be extremely dangerous, its administration requires the greatest caution. Considering the different degrees of

concentration of prussic acid obtained by the different processes we have mentioned, it would be necessary to indicate on the formula, in the plainest manner, the particular acid which is intended to be used, and recommend to the patient or nurse, to shake the mixture before giving a dose, in order to avoid the accumulation of the acid at the surface, which might be attended with serious accidents. Finally, apothecaries ought to be careful to cover the bottle containing this acid, and the compounds into which it enters, either with black or blue paper, to prevent the light from decomposing it.

D. & M. of Adm. *Medicinal prussic acid*, F. M. (Gut. ij. to vj., three or four times a day in a mixture.)——*Pectoral draught*, F. M. (Medicinal prussic acid, gut. xv.; infusion of ground holly, ℥j.; althæa syrup, ℥j.) Dose, cochl. j. every three hours.——*Pectoral mixture*, F. M. (Medicinal prussic acid, 1; distilled water, 128; sugar, 12.) Dose, cochl. ij. every day, one in the morning and the other in the evening.——*Cyanic syrup*, F. M. (Medicinal prussic acid, 1; simple syrup, 128; each ounce contains 4½ grains of acid.) Dose, from ℥j. to ij., in a mixture.——*Hydro-cyanic syrup*, (Prussic acid, prepared by Vauquelin's process, 1; syrup, 9.) This syrup contains such a large proportion of prussic acid, that it can be given only by drops. It is never employed.——*Calming mixture for lotions*, F. M. (Medicinal prussic acid, 1; lettuce water, 128.)

Cyanuret of Potassium. *Cyanuretum potassii.* This compound does not exist in nature.

P. P. It is in the form of cubic, transparent and white crystals, inodorous, and possessing an acrid and caustic taste.

C. P. Cyanuret of potassium, is soluble in water, and changes by dissolving in hydro-cyanate of potassa, which is always with excess of alkali.

Incomp. Subst. All the acids, even the weakest, and the greater number of metallic salts.

Prep. It is obtained by heating for a length of time, in a crucible, the ferro-hydro-cyanate of potassa; the mass resulting from this calcination is dissolved in water; the liquor filtered and set to crystallize.

Th. E. Messrs. Villermé and Robiquet, in order to remedy the inconveniences resulting from the employment of liquid prussic acid, on account of its great volatility and the facility with which it is decomposed, have proposed the substance under consideration as a substitute for the acid. Some experiments made on animals prove that the cyanuret of potassium acts absolutely in the same manner as prussic acid, but with rather less violence.

D. & M. of Adm. Gr. ⅛ to j., in a mixture, or in pills.——*Mixture of cyanuret of potassium*, F. M. (Cyanuret of potassium, gr. ½; lettuce water, ℥ij.; althæa syrup, ℥j.) Dose, cochl. No. j., every two hours.——*Solution of cyanuret of potassium*, or *Medicinal hydro-cyanate of potassa*, F. M. (Cyanuret of potassium, 1; distilled water, 8.) Dose, from gut. iv. to xx., in a mixture.——*Pectoral julep*,

F. M. (Medicinal hydro-cyanate of potassa, gut. xv.; infusion of ground holly, ℥ij.; althæa syrup, ℥j.) Dose, cochl. min. j., every three hours.——*Pectoral mixture*, F. M. (Medicinal hydro-cyanate of potassa, 1; distilled water, 128; sugar, 12.) Dose, cochl. j., morning and night and gradually to vi. or viij. in the course of the day.——*Syrup of hydro-cyanate of potassa*, F. M. (Hydro-cyanate of potassa, 1; simple syrup, 128; one ounce contains, gr. 4½ of hydro-cyanate of potassa,) Dose, from ℥ss. to ℥j. in a mixture.

The Cyanuret of Zinc. *Cyanuretum zinci*, has of late been proposed in Germany, as a substitute for the prussic acid. Dr. Henning asserts, having used it with much success, not only in cases in which this acid is commonly exhibited, but also in verminous diseases of children. He gives it in the dose of gr. j., mixed with pulverized jalap; and in the nervous affections called *cramp of the stomach*, he administers with advantage the cyanuret of zinc in the form of *Anti-gastralgic* powder, F. M. (Cyanuret of zinc, 6; calcined magnesia, 4; cinnamon, 3.) of which the patient takes ten to twelve drops every four hours.

CHAPTER IX.

EMETIC SUBSTANCES.

Although a great number of remedial substances are capable, when taken into the stomach in considerable quantities, of inducing vomiting, we will, however, range under the denomination of *emetics*, (εμέω, I vomit,) only such as produce this phenomenon in whatever manner they may be introduced into the circulation. In fact, these remedies act in this manner, not only in consequence of their local action, but also from a special influence they exercise upon the stomach and the abdominal muscles, which influence takes place after the absorption of their particles. Their general action is likewise characterized by the excitation of most of the organs, the increase of the cutaneous perspiration, or of the secretion of urine, development of the pulse, &c.

Emetics, properly so called, are few in number, and are frequently administered, although they are now, in many cases, less so than they were formerly; which we shall indicate in the sequel. (See Tartar Emetic and Ipecacuanha.)

Mineral Emetic Substances.

Super-tartrate of Potassa and Antimony. *Stibii* and *potassæ tartras*, seu *Tartarus emeticus*. Antimoniated tartrate of potassa. Tartar emetic. This double salt is always the product of art.

P. P. Tartar emetic crystallizes in octaedral or tetraedral, transparent, and colourless crystals; slightly efflorescent, inodorous, of a styptic and nauseous taste.

C. P. It contains 54 of tartrate of antimony, and 34 of tartrate of potassa. Heated, it becomes black, is decomposed, and it produces metallic antimony. It dissolves in 15 parts of cold water and 2 of this menstruum when boiling; finally, it reddens powerfully the solution of litmus.

Incomp. Subst. The concentrated acids, the metallic oxides of the second class and their carbonates, the hydro-sulphates, soaps, gallic acid, and most of the bitter and astringent vegetable substances, such as Peruvian bark, rhubarb, &c.

Prep. Boil equal parts of cream of tartar and glass of antimony in twelve parts of distilled water; filter the liquor and crystallize.

Th. E. The local action of the tartrate of potassa and antimony is essentially irritating; indeed, applied to the skin, it generally

produces a pustulous eruption of a peculiar character, and an inflammation more or less intense. Taken internally, in large doses at once, it acts as a violent poison, and may produce a very lively inflammation of all the intestinal canal. Administered in small doses, the first effects resulting from its exhibition are frequent vomiting and alvine evacuations; but vomiting is not to be attributed to the local action of this substance, for as we have already mentioned in Chapter I. page 31, it takes place whenever tartar emetic is introduced, it matters not in what manner, into the circulation; whether it be ingested into the stomach, or injected into the veins, or finally, applied to any absorbing surface whatsoever. Vomiting seems, therefore, to be under the control of a special action of this remedy upon the digestive canal. But these phenomena, which are always the consequence of the administration of the first dose of tartar emetic, soon disappear, if its exhibition be continued at short intervals, for instance, every hour, and even in very large doses. In this case, the appetite of the patient seems frequently to increase, and he is even tormented by hunger. Thus, from thirty-six to forty-eight grains of this salt may be administered in the twenty-four hours, without producing any symptoms of poisoning. We observe then some very remarkable effects, which it is impossible to account for in a satisfactory manner. The pulse is considerably slower, without, however, its strength being diminished; the cutaneous perspiration is, in general, much increased, and it may even become uninterrupted; but after continuing this administration for a few days, the patient often experiences a disgust for every kind of food, a general uneasiness, a great aversion to this medicine, and sometimes vomiting reappears in all its violence. Dr. Laennec thinks that this substance possesses likewise the property of rendering absorption more active. Drs. Jenner and Baron seem to have had this same opinion; since for a considerable time, they both advised the employment of tartar emetic in minute doses, so as to produce continual nausea, in the treatment of tubercular pulmonary phthisis, in cases of tubercular degeneration of the pleura, peritoneum, and liver; and in chronic engorgements of the glands.

From what we have just stated, it is evident that tartar emetic may fulfil two very different indications, according as it is administered in one way or the other. It has for a long time been exhibited for the sole purpose of provoking vomiting, and it is still at this time one of the emetic substances most frequently used, and the administration of which is most certain and easy. For these few years past, Dr. Rasori, and several other physicians, have called the attention of the profession to the advantages which might be derived from the employment of this salt, in large and continued doses in the treatment of acute inflamma-

tory diseases. They consider it as one of the most energetic contra-stimulants, and they administer it as such with positive advantage, provided the first doses do not produce vomiting nor superpurgation, and that the stomach be in that state which they call *tolerance*. Several French practitioners, and amongst others Dr. Laennec, have ascertained the efficacy of this means in the treatment of peripneumony, jaundice, hepatitis, and in parenchymatous inflammations generally.

D. & M. of Adm. As a vomit, gr. j. to iv. in two tumblerfuls of lukewarm water, by half tumblerfuls every half an hour. As a purgative, gr. j. to ij., in ℔ij. of aqueous menstruum, of which a tumblerful is given every hour. As a contra-stimulant, gr. iv. to ℈j. and gradually to ℈ij. in 24 hours.——*Dr. Laennec's contra-stimulant apozem*, Paris H. (Tartar emetic, gr. vj.; infusion of orange-tree leaves, ℔j.; simple syrup, ℥ij.) Dose, ℥iij. every two hours. The dose of tartar emetic is increased 3 grains a day.——*Vomitive draught* called *Holy water*, Paris H. (Tartar emetic, gr. vj.; water, ℥viij.) To take in two doses, every hour, in the treatment of colica pictonum, as used at *La Charité*.——*Vomitive mixture*, Paris H. (Tartar emetic, gr. iij.; syrup of honey, ℥ss.; water, ℥iv.) Dose, one ounce every hour.——*Emeto-cathartic mixture*, Paris H. (Tartar emetic, gr. ij.; sulphate of soda, ℥ss.; veal broth, ℔ij.) Dose, a tumblerful every half hour.——*Dr. Peysson's stibio-opiated mixture*, Paris H. (Tartar emetic and opium, āā. gr. j.; gum tragacanth, ℈j.; orange-flower water, ℥ij.; water, ℥viij.) Dose, cochl. j. ever half hour.——*Vinum antimonii tartarizati*, U. S. (Tartarized antimony, ℈ij.; distilled water, f.℥iv.; wine, f.℥vj.; four grains to the fluid ounce.)—L., F., Pr., Den., Pol. (Tartarized antimony, ℈j.; boiling distilled water, f.℥viij.; rectified spirit, f.℥ij.)——E. *Vinum tartratis antimonii*, (Tartrate of antimony, gr. xxiv.; Spanish wine, ℔j.;) f.℥i. contains gr. ij. of tartarized antimony. Dose, as a diaphoretic, ♏x. to f.℥j.; as an emetic, one or two tea-spoonfuls every ten minutes until vomiting be excited.——*Vinum antimoniale*, P. (Tartar emetic, 1; white wine, 500;) one ounce contains a little more than one grain of tartar emetic. As an emetic, (seldom used.) Dose, from ℥j. to ℥ij.; as a diaphoretic, ʒj. to ʒiv.

Externally. Gr. xij. to ℈j. on a Burgundy pitch plaster.——*Unguentum antimonii tartarizati*, New York H. (Tartar emetic, ʒjss.; spermaceti ointment, ℥j.)—P. (Tartar emetic, 5; axungia, 16.)—Paris H. (Tartar emetic, 1; axungia, 8.)—Pr. (Tartar emetic, 1; axungia, 2.) In frictions.——*Linimentum ammoniæ et antimonii tartarizati*, U. S. (Liniment of ammonia, f.℥j.; tartarized antimony, ʒj.)——*Emplastrum tartratis potassæ stibiatæ*, B. (Tartar emetic and simple plaster, āā. q. s.)

Kermes Mineral. Sub-hydro-sulphate of Antimony. *Stibii hydro-sulphuretum rubrum. Kermes minerale.* This compound does not exist in nature.

P. P. Kermes mineral is a reddish-brown powder with a tinge of purple, of a velvet-like appearance, light, inodorous, and of a metallic taste, which is but slowly developed.

C. P. Chemists do not agree as to the nature of this substance, they consider it generally as a sub-hydrated sulphate of antimony, with an excess of base; but according to Berzelius's experiments it appears to be a hydrated sulphuret of antimony in a state of great division, and formed of 100 of antimony, and 37.2 of sulphur. However, kermes is insoluble in water, but it dissolves

in some sulphuretted hydro-sulphates, such as those of potassa and lime. On exposure to the air and light, it loses its red colour and velvet-like appearance. Heated to a red heat with charcoal, it is decomposed, and is converted into metallic antimony.

Incomp. Subst. All the acids.

Prep. By the *dry process*, it is obtained by heating in a crucible two parts of sulphuret of antimony, and one of common potassa; pulverize the mass thus obtained, and boil it with ten or twelve parts of water. Filter the liquor, whilst boiling, and the kermes precipitates on cooling. In the *humid way*, boil for half an hour 1 part of finely pulverized sulphuret of antimony, 22.5 of crystallized sub-carbonate of soda, and 250 of water; kermes precipitates likewise on cooling. This is finer, and preferred to that prepared by the former process.

Th. E. In the dose of a few grains, this remedy operates as an emetic, and has frequently been exhibited as such, although its action is less durable than that of tartar emetic. When administered in smaller doses at a time, we may, as is the case with the tartrate of antimony and potassa, gradually increase the quantity, and in this manner be able to give very large doses, without producing vomiting. It then acts as a stimulant, and its influence seems to be principally felt by the lungs and the cutaneous surface. It is frequently employed in this way in the last stage of acute peripneumonia, in chronic catarrhs, in humid asthma, &c. It facilitates powerfully expectoration and the resolution of pulmonary engorgements. It is recommended likewise as a sudorific in cutaneous diseases, chronic rheumatism, gout, &c. Finally, it is frequently exhibited by the partizans of the contra-stimulant practice, in the same cases and manner as tartar emetic, although it appears, from Laennec's observations to be much less efficacious.

D. & M. of Adm. As emetic, gr. vj. to gr. x. suspended in a mucilaginous menstruum. As an expectorant, gr. ½ to iv. in an emulsive mixture. As a contra-stimulant, gr. ij. to ʒj. and more, progressively.——*Kermes and camphor bolus*, Paris H. (Kermes mineralis, gr. j.; camphor, ʒj.; cream of tartar, gr. xv.; yolk of eggs, q. s.; for four boluses.) Dose, from No. j. to No. iv. a day.——*Gummous mixture with kermes*, Paris H. (Kermes, gr. j. to gr. iij.; gummous mixture, ʒiv.; gum tragacanth, gr. vj.) Dose, a table-spoonful every hour.

Golden Sulphuret, or Sulphuretted Sub-hydro-sulphate of Antimony. *Hydro-sulphuretum luteum stibii sulphuratum*, seu *Sulphur auratum antimonii*. This compound is always the product of art.

P. P. The golden sulphuret of antimony is a powder of an orange yellow colour, inodorous and tasteless.

C. P. According to Thénard, it is formed of sulphur, 12; hydro-sulphuric acid, 17.87; and protoxide of antimony, 68.30.

Berzelius considers it as a sulphuret of antimony, composed of 100 of this metal, and 49.6 of sulphur. It is insoluble in water, and acts with reagents in the same manner as kermes.

Prep. It is obtained by pouring a few drops of nitric or acetic acid into the mother-waters from which the kermes has been procured. The precipitate is washed and dried where light cannot have any access.

[The American Pharmacopœia gives the following formula; solution of potassa, ℔iv. water, Oiij.; prepared sulphuret of antimony, ℔ij.; boil them in a covered iron pot, over a slow fire, for three hours, frequently stirring the mixture with an iron spatula, and adding water as it may be required; strain the hot liquor through a double linen cloth, and add to it when strained, as much diluted sulphuric acid as may be necessary to precipitate the sulphuret, which must be well washed with warm water.]

Th. E. This substance possesses the same virtues as the kermes, and is employed in the same cases and manner. It is now seldom used in France, but every where else, and principally in England, it is preferred to the kermes.

D. & M. of Adm. The same as those of the preceding substance.

Sulphuret of Antimony. *Sulphuretum antimonii.* Crude antimony. This substance exists abundantly in nature, and is found in France, England, Hungary, &c.

P. P. The sulphuret of antimony is in masses formed of shining crystalline needles, of a bluish gray, staining paper black, without taste, and of the specific gravity of 4.5.

C. P. It is formed of 100 of antimony and 37 of sulphur. Heated in the open air, it melts easily, and disengages sulphurous acid, deprived of the contact of air, it is not decomposed. It is insoluble in water, and dissolves in hydro-chloric acid, by producing a considerable disengagement of sulphurous acid.

Prep. It is separated by fusion from its ore, and reduced to impalpable powder, for medical use.

Th. E. The sulphuret of antimony was formerly administered internally as an emetic and a diaphoretic, but is now almost entirely out of use. Several physicians, however, recommend its employment in scrofulous engorgements, cutaneous diseases, and old venereal affections which have withstood the mercurial medication. It is principally employed in the preparation of kermes, and enters into the composition of several officinal preparations.

D. & M. of Adm. Gr. viij. to ℈j. and even ʒj. in suspension or pills.——*Kunkel's antimonial lozenges*, P. (Sulphuret of antimony and small cardamom, āā. 2; sweet almonds, 4; cinnamon, 1; sugar, 32; for twelve grain lozenges.) Dose, from No. iv. to x. a day.

Several other antimonial preparations were employed formerly as emetics and diaphoretics, but they are now justly discarded: we shall mention only the following as the principal ones.

Glass of Antimony. *Vitrum Antimonii*, a mixture of sulphur and oxide of antimony, united to silica and oxide of iron, which is obtained by melting some crude antimony in a clay crucible, and pouring out the liquid matter, after having kept it for a while in fusion. On cooling, it forms transparent, vitreous scales of a hyacinth colour. This preparation, is a violent emetic, and is no longer used, except in the north of Europe and by the physicians of the contra-stimulant school. *Vitrum antimonii ceratum*, R. (Glass of antimony, 8; yellow wax, 1.) Dose, from gr. j. to ij., in syrup, two or three times a day.

Antimonial Powder. *Pulvis antimonialis*, better known by the name of James' Powder, a mixture, or perhaps a triple combination of oxide of antimony, of phosphoric acid and lime, obtained by calcining, in an iron crucible, equal parts of sulphuret of antimony, and hartshorn shavings. This compound, seldom used in France, is on the contrary, frequently employed in this country and England, and highly spoken of by some practitioners as an excitant and a diaphoretic. It is given in the dose of from three to eight grains, in powder, or in pills, every fourth or fifth hour.

Unwashed Diaphoretic Antimony, or Rotrou's Solvent. *Antimonium diaphoreticum non ablutum*, is a compound of sulphate and ammoniate of potassa, prepared by heating to red heat, in a crucible, a mixture of three parts of nitrate of potassa and one of sulphuret of antimony. By treating with water the matter thus produced, a white powder is obtained, which may be considered as an ammoniate of potassa and is called, Washed Diaphoretic Antimony. These compounds have enjoyed a great reputation as diaphoretic and dissolvant; they were administered in the dose of from gr. xij. to ℈j., in a mixture. They are almost out of use at present.

Algarotti's Powder, *Pulvis algarotti*, is a sub-hydro-chlorate of antimony which was once employed as an emetic; but is now used only for preparing tartar emetic.

Crocus metallorum. Crocus antimonii, is a mixture of three parts of oxide with one of sulphuret of antimony.

The sulphates of zinc and copper, which we have already described, pages 88 and 65, under another head, are occasionally used under certain circumstances as powerful emetics.

Vegetable Emetic Substances.

Family Rubiaceæ.

Officinal or Annular Ipecacuanha. *Radix ipecacuanhæ. Cephaelis ipecacuanha*, Richard. A very small shrub, growing in Brazil, in thick and shady woods. P. U. The root.

B. C. Root or stump subterranean, horizontal, repent; stem straight, one or two feet high, simple; leaves six or eight at the top of the stem, opposite, entire and oval; flowers white, very small, united in a capitulum looking apparently as the continuation of the stem, surrounded with a large involucrum; calix five-toothed; corolla infundibuliform, five-divided; five stamina; fruit ovoid, black, and containing two small whitish nuts.

P. P. The root of ipecacuanha, such as is found in the shops, is from three to four inches long, compact, brittle, irregularly twisted; of the size of a goose-quill; annulated with considerable circular depressions at short intervals; of a brown colour, sometimes gray or reddish; of a weak but disagreeable smell; of a bitter, acrid and nauseous taste. These roots are composed of a cortical part, the fracture of which is brown and resinous, and of a fibrous *meditullium*, of a yellowish colour, less sapid and odorous.

C. P. According to Pelletier, this root is composed of *emetia*, 16; fatty matter, 1.2; resinous substance, 1.2; gum and salts, 2.4; starch, 53; matter containing nitrogen, 2.4; lignin, 12.5; and traces of gallic acid. Warm water, alcohol, and ether, take up its active principles.

Th. E. Ipecacuanha, administered in moderate doses, acts on the stomach, the mucous membrane of which is more or less violently irritated by it, and induces vomiting, and sometimes alvine evacuations; but besides this action, it possesses some very decided stimulant and tonic properties, which seem especially to influence the pulmonary organs. This circumstance is principally observable when it is administered in small doses, so as not to produce vomiting. Finally, in very large doses, the effects of this substance seem to be spent on the brain, and produce a great drowsiness of shorter or longer duration.

It is most frequently administered in order to provoke vomiting; but it is less certain than tartar emetic; there are circumstances, however, in which it is preferable. It has been highly recommended in the treatment of dysentery, croup and puerperal peritonitis. In this latter disease, it is administered principally when, by means of more or less considerable blood-letting, we have succeeded in diminishing the intensity of the inflammatory symptoms; and although it is far from possessing all the virtues which were ascribed to it, it may nevertheless be useful under many circumstances. Ipecacuanha is given likewise in altera-

tive doses to revive the action of the stomach, and stimulate the mucous membrane of the bronchiæ in certain pulmonary catarrhs, hooping-cough, &c.

D. & M. of Adm. *Powder*, as an emetic, gr. xv. to xxx., in lukewarm water; as a stimulant, gr. j. to iv.——*Mistura ipecacuanhæ composita*, mixture for hooping cough, P. (Ipecacuanha, 1; senna leaves, 2; oximel of squills and hyssop syrup, āā. 8; boiling water, 48.) By table-spoonful.——*Vomitive mixture*, Paris H. (Ipecacuanha, ℈j.; tartar emetic, gr. j.; syrup of honey, ℥ss.; water, ℥iv.) To be taken in four doses, every half hour.——*Pulvis ipecacuanhæ et cupri sulphatis*, U. S. (Ipecacuanha, ℈j.; sulphate of copper, gr. v.)——*Pulvis emeticus*, Guy's H. (Ipecacuanha, ℥x.; tartar emetic, ℥ss.) Dose, from gr. v. to xxx.——*Pulvis ipecacuanhæ cum rhæo*, Guy's H. (Ipecacuanha, ℥j.; rhubarb, ℥ij.) Dose, from gr. iij. to v.) Two, three or four times a day.——*Tinctura ipecacuanhæ*, P. (Ipecacuanha, 1 part; alcohol, 4 parts.) Dose, from ℥ss. to ℥j.——*Vinum ipecacuanhæ*, U. S., L., E, D., B., F. (Ipecacuanha, 1 part; Spanish wine, 16.) As emetic, ℥ss. every quarter of an hour; as a stimulant and a diaphoretic, gut. xx. to xl., several times a day.)——*Haustus ipecacuanhæ cum antimonio*, (Wine of ipecacuanha, ℥vj.; antimonial wine, ℥ij.)——*Syrupus ipecacuanhæ*, P. (Ipecacuanha, 1; water, 14; sugar, 24; one ounce contains about 16 grains of ipecacuanha.) Dose, from ℥ss. to ℥ij.——*Mixture against croup*, Paris H. (Syrup of ipecacuanha, ℥j.; tartar emetic, gr. jss.; oximel of squills, ℥iij.; infusion of polygala; ℥iv.) By spoonful.——*Ipecacuanha lozenges*, P. (Ipecacuanha, 1; sugar, 40, mucilage of gum tragacanth with rose water, q. s.; for 12 gr. lozenges, each of which contain ¼ of ipecacuanha.) Dose, from No. iv. to x.

Striated Ipecacuanha. *Psychotriæ radix. Psychotria emetica*, Lin. A small shrub, almost similar to the preceding and growing in Peru. P. U. The root.

B. C. Stem fifteen inches to two feet high; leaves lanceolate, acute; flowers white, small, in short clusters in the axilla of the leaves; fruit ovoid, crowned by the teeth of the calix.

P. P. The roots of the striated ipecacuanha are cylindrical, simple, of the size of a quill, less twisted than those of the *cephaelis*, not rugose, with circular depressions and elevations at short intervals, covered with an epidermis of a deep brown colour, and longitudinally striated; their fracture is of a blackish-brown, slightly resinous, and their taste is insipid and nauseous.

C. P. The chemical composition of this substance differs little from that of the *cephaelis*, except that it contains 8 per cent. only of emetia.

Th. E. The same as those of the officinal ipecacuanha, with which it is sometimes mixed in commerce. It is much less energetic than the preceding, and is seldom employed in Europe or in the United States, whilst it is almost exclusively so in South America.

White or Undulated Ipecacuanha, *Radix Richardsoniæ*, is furnished by the *Richardsonia brasiliensis*, Gomez, which grows in meadows, in the neighbourhood of Rio Janeiro. This plant is of the same size as that of the officinal ipecacuanha, of a

whitish-gray colour externally, of a meal-white inside; the cortical part is marked with semicircular furrows, and seems undulated. The white ipecacuanha is sometimes mixed in commerce with the officinal ipecacuanha, but is not used in France. It is much less emetic, and contains only 6 per cent. of emetia, besides a considerable quantity of starch.

The family *Rubiaceæ* furnishes yet several plants, the roots of which are endowed with emetic properties, but they are seldom used. We shall mention, according to Mr. Augustus de Saint-Hilaire, the *Spermacoce poaya* and *ferruginea*, the *Richardsonia rosea* and *scabra*, and the *Psychotria herbacea*.

Emetia. A vegetable alkaline substance, discovered by Mr. Pelletier in the root of the *Cephaelis ipecacuanha*, and existing in variable proportions in the different species of ipecacuanha.

P. P. This substance is pulverulent, white, inodorous, unalterable in the air, of a bitter and disagreeable taste.

C. P. It is composed, according to Messrs. Pelletier and Dumas, of carbon, 64.57; nitrogen, 4.00; hydrogen, 7.77; oxygen, 22.95. It is very soluble in alcohol, much less so in boiling water, and almost insoluble in this menstruum, when cold. It is dissolved neither by the oils nor by ether, which precipitates it from its alcoholic solutions. It possesses the alkaline properties, and dissolves in the acids with which it forms acid salts, capable of crystallization. Heated, it melts at 50° Centig. (122° Fahr.) It is decomposed at a high temperature.

Incomp. Subst. Infusion of galls, gallic acid, &c.

Prep. Treat with ether the pulverized ipecacuanha, in order to liberate it from the fatty matter; digest in alcohol; evaporate to dryness the alcoholic tincture, and treat the residue with cold water, which separates the remaining fatty matters. Afterwards employ calcined magnesia to take up the gallic acid, wash the magnesian precipitate, and separate emetia by dissolving in concentrated alcohol.

Th. E. Emetia, even in small doses, is a powerful emetic, and seems to act upon the nervous system, as is evinced by the tendency to sleep, and even the more or less profound drowsiness, which are the consequence of its administration. In large doses it produces besides vomiting, a violent inflammation of the lungs and of the gastro-intestinal mucous membrane. It is exhibited in all cases in which the use of ipecacuanha is indicated; however, as its action is very energetic, its administration requires a good deal of judgment and caution on the part of the practitioner.

D. & M. of Adm. Gr. ½ to ij. to a mixture of ℥iv.—*Vomitive mixture*, F. M. (Pure emetia dissolved in acetic acid, q. s. gr. j.; infusion of linden tree flowers, ℥iij.; simple syrup, ℥j.) Dose, cochl. j. every quarter of an hour, until it

vomits.——*Emetia syrup*, F. M. (Emetia, gr. iv.; simple syrup, ℔j.; one ounce contains ¼ of a grain of emetia.) Dose, from cochl. min. j. to iv.—— *Emetia lozenges*, F. M. (Emetia, gr. viij.; sugar, ℥iv.; for 9 gr. lozenges, each of which contains 1-32 gr.) Dose, from No. 1 to 2 every hour.

Impure Emetia, called by Dr. Magendie *coloured emetia*, is likewise employed. Its action, compared to that of the pure article, is in the proportion of 1 to 3. It is procured in transparent scales, very deliquescent, and consequently soluble in water, of a weak odour and bitter taste. We are of opinion that the pure emetia is preferable to the other, on account of its being more certain in its operation. It is necessary that the physician should carefully designate which of these two preparations it is his intention to prescribe.

Family Euphorbiaceæ.

[Ipecacuanha-spurge. *Euphorbia ipecacuanha*, Lin. A perennial plant, exclusively native of the United States. P. U. The root.

B. C. Stems numerous, dichotomous, white under the earth and sand, red, pale green, or yellow above; the stipules are heart-shaped and small; leaves opposite, sessile, generally oval and entire, very small while the plant is in blossom, but increasing in size when it grows older; flowers on solitary, uniflowered, and axillary peduncles; perianthe small, campanulate, five-lobed; capsules round, three-angular-like and smooth, containing three seeds.

P. P. The fresh root is from three to seven feet long, tuberculated, and of a yellowish colour; from half an inch to an inch in diameter, its taste is then acrid. The dry root is light and brittle, has a sweetish and not very disagreeable taste.

C. P. We may infer, from Dr. Bigelow's experiments, that this root contains caoutchouc, resin, mucilage, and probably fecula. Dr. Staples has ascertained that it contained no emetia.

Th. E. The emetic virtues of this plant have been more generally known from the experiments of Drs. Hewson and J. R. Barton, of the Pennsylvania Hospital, related by Dr. W. P. C. Barton in his Medical Botany, and from those he has made himself. Dr. Bigelow states that he has found this root, in the majority of instances in which he has exhibited it, to operate with as much ease as the other emetics. In large doses, however, it excites active and long-continued vomiting, attended with a sense of heat, vertigo, indistinct vision, and prostration of strength. Administered in moderate doses, it is a safe and efficacious emetic, but it acts sometimes also on the bowels, rather more than the officinal ipecacuanha. Dr. Barton has found it to produce, in one instance where he administered it in the dose of twenty-five grains, an hyper-catharsis, which continued for fourteen hours.

In combination with sulphate of potassa and opium, it furnishes a Dover's powder, which is in no way inferior to the *Pulvis ipecacuanhæ compositus.* Indeed, it has this advantage over the foreign article, that its taste and odour are not unpleasant. Considering how often the imported ipecacuanha is adulterated, it will be found of the utmost importance to pay more particular attention to this native article, which may become even an advantageous substitute, and is a real addition to our list of valuable emetics.]

[Large Flowering Spurge. *Euphorbia corollata,* Lin. A native perennial plant, growing in dry soils. P. U. The root.

B. C. Stem simple, erect; leaves scattered, sessile, oblong, cuneiform, and entire; umbels with five rays and leaves; rays trifid, with two oblong bractes; flowers pedicellate, rotate, five-lobed, corolliform; capsule smooth.

Th. E. It is employed in the same manner as the preceding. Dr. M'Keen, in his experiments with this article, found the requisite dose to be from three to twelve grains; and, in every instance, it acted as a cathartic; nausea occurred in most cases, but in a few only vomiting followed. It is a popular medicine among the country people for the cure of dropsy; and, as the preceding, it has been found, by several physicians, a valuable diaphoretic in combination with opium and sulphate of potassa.]

Family Rosaceæ.

[Indian Physic. American Ipecacuanha. *Gillenia trifoliata,* Mœnch. *Spirea trifoliata,* Lin. An herbaceous, perennial plant, indigenous to North America, growing in shady woods and bogs. P. U. The root.

B. C. One or several stems from two to three feet high, branched above, round, and commonly of a reddish colour; leaves universally ternate; leaflets lanceolate, serrate, and nearly equal; flowers terminal, forming a loose panicle, composed of linear and lanceolate petals, somewhat obtuse, and bent nearly in a right angle, at the distance of an eighth of an inch from their insertion; calix tubular, campanulate, ventricose, tapering at the base, and terminated in five-pointed segments; stamina, about twenty, short; anthers small; capsule quinquelocular, containing many seeds.

P. P. Root composed of numerous, long, brown, and slender caudices, radiating from a thick tuber; some of these are knotted for a considerable portion of their length. This root, like the ipecacuanha, consists of a bark and a lignous part; the active power seems to reside in the former. Its taste is bitter and nauseous, and its smell nearly similar to ipecacuanha.

C. P. According to Dr. Bigelow, it contains a bitter extractive matter, a resin, &c.; and Dr. Staples has ascertained that this root does not contain emetia.

Th. E. This substance, with many country practitioners, has nearly superseded ipecacuanha, and is thought by a great number of physicians to be very little inferior to the latter article. Dr. Bigelow observes, however, that from his own experience with this remedy, he was led to regard it as an emetic of very uncertain operation. It seems to possess a tonic power, and has, accordingly, been thought very beneficial in intermittent fever. Dr. Eberle says that he found it particularly serviceable as a sudorific in dysenteric affections; and that, from what he had observed of its effects in other cases, it appears to him that the opinion entertained by the late Dr. Barton, of its possessing tonic properties, is not without foundation.

D. &. M. of Adm. Powder, as an emetic, in the dose of about gr. 30. As tonic, from 2 to 4 grains.

The *Gillenia stipulacea*, a plant of the same genus as the preceding, with pinnatifid, radical leaves, is said to be still more valuable. This plant is confined to the west side of the Alleghany mountains, extending as far north as the state of New York.]

Family Phytolaceæ.

[Poke-root. American Nightshade. *Phytolacca decandra*, Lin. A tall, herbaceous plant, growing abundantly in every part of the United States, and now naturalized in Europe. P. U. The root principally, but the leaves and berries are also employed.

B. C. Stem from five to seven feet high, thick, round, branched, and glabrous; leaves ovate, narrow at both ends, acute, veined on the under side, and smooth on both; flowers in long racemes, often opposite to the leaves; perianthe five-leaved, divisions concave and ovate, folding inwards; stamina short, from seven to twenty, with double anthers; styles from five to ten; fruit, a superior, ten-celled, ten-seeded berry.

P. P. This root is thick, fleshy, and sometimes of a considerable size.

Th. E. The numerous experiments made with this plant by Drs. Bigelow, Fisher, Hayward, Shults, &c. tend to prove its valuable therapeutical properties. As an emetic it seems hardly inferior to ipecacuanha; ten grains of the powder will seldom remain on the stomach, and twenty or thirty grains will always produce a powerful emesis, and sometimes catharsis. It operates with ease, and rarely occasions nausea, pain, or cramp; it is rather slow in its effects, but continues to operate for a longer period of time than is usual with emetics, though it is

readily checked with opium. In the form of decoction, tincture, or extract, it has obtained some reputation in the treatment of rheumatic affections, and especially in syphilitic rheumatism, or in cases of scrofula. This medicine has, in some instances, produced slight narcotic effects.

As an external application, it has proved very beneficial in all sorts of cutaneous diseases, in cancerous sores, &c. It acts as a local stimulant, and a mild caustic. It has been used with advantage in fistula lachrymalis, in the form of an extract, applied twice a day on the part affected; and in hæmorrhoids, given internally in the form of an infusion, and when it does not operate, the same infusion is to be injected into the rectum. This method will, in general, effect a perfect cure.]

Family Campanulaceæ.

[Indian Tobacco. *Lobelia inflata*, Lin. A native biennial plant, growing almost throughout the United States. P. U. The leaves and capsules.

B. C. Stem upright, solitary, angular, much branched about midway; leaves irregularly scattered, alternate, oval, generally sessile, with margins unequally dentated; flowers in terminal racemes, supported on short peduncles; corolla monopetalous and labiate, blue externally, violet within; capsules inflated, egg-shaped, containing numerous small seeds.

P. P. Leaves and capsules very acrid, taste similar to that of tobacco, producing a copious discharge of saliva, sickness at the stomach, and giddiness.

Th. E. Indian tobacco is a powerful emetic, frequently producing at the same time alvine evacuations. In large doses it occasions great relaxation, debility, and perspiration. Dr. M. Cutler, who has used it himself with the greatest benefit in asthma, says, that in several paroxysms it gave him immediate relief. Dr. Drury, of Marblehead, who is also asthmatic, has used the tincture of the Indian tobacco, which he found very serviceable in a severe paroxysm he had early in the spring, and from that time he has been entirely free from the complaint. Dr. Cutler adds, that he made a tincture of the fresh leaves, and took care to have the spirit saturated, which he thinks very important. In a severe paroxysm, attended with an extreme difficulty of breathing, and after it had continued for a considerable time, he took a table-spoonful; in three or four minutes his breathing was as free as it ever was; ten minutes after, he took another spoonful, which occasioned sickness; in ten minutes more, a third one, which produced sensible effects on the stomach, a very moderate puking, and a kind of prickly sensation through the whole body, even to the extremities of the fingers and toes. Since that time he has

enjoyed as good a state of health, perhaps, as before the first attack. Dr. Coxe says, that the result of subsequent practical observation has amply confirmed the utility of lobelia inflata in various diseases. In numerous instances of asthma it has procured the most essential relief, though in general its effects were only temporary and palliative. As a pectoral, it has been found useful in consumptive and other coughs depending on mucus accumulated in the bronchial air-vessels, by exciting nausea and expectoration. From its very speedy operation as an emetic, and its stimulating effects on the mouth and fauces, beneficial results might be expected from its use in croup and hooping-cough; and on some trials our expectations have been realized in this respect. It may perhaps be anticipated to supersede seneka as a remedy in the former, and antimonials in the latter affection. More extensive practical knowledge of the properties of this plant, and the various forms and circumstances of its administration, are still a most desirable object.

This plant should be collected in August, and plucked up by the roots; every part of the plant possesses active properties, but the root and inflated capsules are decidedly the most powerful.

D. & M. of Adm. As a vomit, powder, gr. x. to ℈j. for an adult.——*Saturated tincture*, ʒj. to ʒiv. As an expectorant, in smaller proportions. The saturated tincture may be administered to children of two years old in doses of gut. xx. to xl.]

Family Apocyneæ.

[Dog-bane. *Apocynum androsæmifolium*, Lin. A perennial American plant found from Canada to Carolina. P. U. The root.

B. C. Stem erect, herbaceous, from three to five feet high, cylindrical, smooth, often rose-coloured, forked several times; leaves opposite, petiolate, pale beneath, acute, entire, two or three inches long, with a large nerve; flowers corymbose, or paniculate, axillary or terminal; calix short, five-cleft; corolla white, tinged with red; anthers connivent, sagittate; style obsolete; stigma thick, acute; fruit, a pair of follicles, long and linear; seeds numerous, comose.

P. P. The whole plant is lactescent; the root is intensely bitter and nauseous.

C. P. It is considered as containing a bitter extractive principle, soluble in water and alcohol, a colouring principle soluble in water only, a very large quantity of caoutchouc, and a volatile oil.

Th. E. It is a very active plant, highly valued by our southern Indians. The root is the most powerful part, and is much employed by our country physicians instead of ipecacuanha. Thirty grains of the recently powdered root evacuate the stomach as effectually as two-thirds of this quantity of ipecacuanha, by

which name it is known in various parts of the eastern states. Its power is diminished by keeping, and destroyed by age. Professor Bigelow remarks that we have very few indigenous vegetables which exceed this apocynum in bitterness, and thinks the sensible and chemical properties of the root promise a good effect, when given in small doses, as a tonic medicine.]

Family Myriceæ.

[Wax Myrtle. Candle-berry Myrtle. *Myrica cerifera*, Lin. A native shrub of the United States, most abundant on the sandy sea-coast. P. U. The bark of the root, and the wax, or concrete oil obtained from the berries.

B. C. Stem ramose, furnished with a grayish bark, from six to twelve feet high; branches cylindrical, covered with a brown or slightly reddish epidermis; leaves alternate, oblong, lanceolate, pointed at top, and scattered with resinous atoms; aments loose; axillary short; calycinal scales acute, not shining; fruit, a globular berry, furnished externally with an unctuous white powder, and containing a large quantity of wax.

C. P. According to Dr. Dana's analysis, the berries of the Myrica cerifera contain wax, 32.00; resino-extractive, 5.00; black powder, 15.00; kernels, 47; loss, 0.50.

Th. E. This shrub seems to possess considerable medicinal properties. The bark of the root is employed in domestic practice in cases of jaundice, and its powder has been administered as an emetic. Dr. James Mann, by whom it has been tried, thinks that the strength of this bark is equal to ipecacuanha.

Dr. Fahnestock, who has paid particular attention to the properties of the *myrtle wax*, furnished by the different native species of the genus *Myrica*, has favoured us with some very interesting observations, which we are happy to introduce here for the benefit of our readers. They came rather too late to hand to enable us to place this substance in its proper class, *i. e.* amongst the astringents; but we think that under the head of the plant which furnishes it, it will not be altogether misplaced.

Pursh distinguishes four American species, viz.: the *Myrica gale*, *M. cerifera*, *M. caroliniensis*, and *M. pennsylvanica*.

The *myrtle wax* is a concrete oil, obtained from the Myricæ. The shrub which yields it abounds in many parts of the United States, particularly in Pennsylvania, New Jersey, Delaware, Virginia, the Carolinas, and Louisiana. It varies in height from three feet to the size of the common cherry tree, and bears a small berry, covered with a shining down of a gray-ash colour, which being melted in boiling water, collects on the surface, and forms a cake of solid wax.

This substance is a concrete oil of moderate hardness and con-

sistence; it has in part the tenacity of bees wax, though without its unctuosity; along with this it also possesses in some degree the brittleness of the resins. The colour of the myrtle wax is a pale green; the shades of the different species are somewhat varied; in most of them the green has a tendency to a dirty gray; in others it is lighter and more transparent. Its specific gravity is about 1.0150. It is fused at a temperature of 109° Fahr.; by sufficiently increasing the heat, it burns with a peculiar, clear and white flame, producing little smoke, and during the combustion emits an agreeable aromatic odour.

Bostock,* in his analysis, found—1st. That water has no action upon it, either when cold, or at the boiling point. 2d. Alcohol, when boiling, dissolves it sparingly, and it precipitates again on cooling. 3d. Sulphuric ether, at the common temperature of the atmosphere, dissolves it only in small quantities, but acts upon it rapidly when boiling, the greater part of which separates as the ether cools. 4th. Rectified oil of turpentine, at the temperature of the atmosphere, softens the wax; assisted by heat, one hundred grains of the spirit dissolve six grains of the wax, part of which separates as the fluid cools. 5th. When boiled with liquid potassa the fluid becomes turbid, and the wax rises to the surface nearly without colour, in a flocculent form. In this saponaceous state it has lost its inflammability and fusibility, and forms an opaque solution with water. 6th. Pure ammonia exhibits with it phenomena in many respects similar to those produced by the fixed alkalies, though in a less degree than that resulting from the action of potash. 7th. The mineral acids have but little effect upon it; the sulphuric, when assisted by heat, converts it into a dark brown mass; the nitric changes the colour from green to a pale yellow; and by long digestion in muriatic acid, it becomes a bright orange.

It possesses a very considerable astringent quality, and in an eminent degree that of a narcotic or anodyne. To the taste the grain is astringent and somewhat styptic, making a very sensible and lasting impression on the fauces, and its odour is pleasant and balsamic. M. Alexandre† supposes its astringent quality to reside in the kernel, or the covering which surrounds the seed, and which gives a very fine lake colour in the fresh state. This property he attributes to gallic acid, but the experiments which led to the deduction are very unsatisfactory. Dr. William M. Fahnestock, who has lately introduced it to the attention of the medical public,‡ believes that the only active quality of the medicine is the colouring principle, which it imbibes from the pellicle of

* Nicholson's Journal, Vol. 4.
† History of the Academy of Sciences, 1722 and 1725.
‡ American Journal of the Medical Sciences, Vol. II.

the seed in preparing it, from the circumstance of the wax of the first boiling being much paler, while that which succeeds becomes much darker, and possesses more of the balsamic odour, and from the fact, that the liquor in which it has been boiled, when evaporated to the consistence of an extract, has been most successfully applied to the most obstinate state of disease. This is corroborated by the experiments of M. Cadet,* and Dr. Fahnestock directs the investigations of future experimenters to that particular subject, and also to discriminate between the species to be used, as he found a very considerable difference in their qualities.

Dr. Fahnestock used it very successfully in an epidemic of typhoid dysentery, which prevailed at Harrisburg, Pa. in 1822. His mode of administering it is a drachm or two of the concrete oil, rubbed to powder, or made into pills, with mucilage and oil of cinnamon, premising its administration by gentle evacuants. He used that procured from the species Pennsylvanica, and deems it a very efficient balsamic anodyne astringent.]

There are, besides, a great many European or foreign plants, the roots of which possess emetic properties, but as they are not generally used in practice, we shall merely mention the principal ones.

Ionide. *Ionidium ipecacuanha*, Ventenat. *Viola ipecacuanha*, Lin. of the family *Violaceæ*, and growing in Cayenne and Brazil. Its root is cylindrical, of the size of a quill, twisted, of a grayish white. It contains starch, traces of matter producing vomiting, some salts and fatty substances.

Sweet Scented Violet. *Viola odorata*, Lin., Wild. Violet, *V. arvensis*, Lin.; Dog-violet, *Viola canina*, Lin., &c.; all these plants growing spontaneously in Europe,† possess properties analogous to the preceding, although weaker; for which they are indebted to an alkaloid principle, nearly related to emetia, and discovered by Mr. Boulay, who has called it *Violin, (violia.)* This substance possesses the same virtues as the real emetia, and seems only to be endowed with a more marked purgative action.

* Annal. de Chemie, Vol. 44.

† [When the numerous species of the native American *Violæ* shall have been carefully examined, we do not doubt that we shall find that some of them possess the same properties as the above mentioned violets, and that they contain also the *Violia.* We perfectly remember that, in a botanical excursion in the neighbourhood of Baltimore, we once chewed the root of a species of viola, which we believe to be the *V. cuculata*, and experienced considerable nausea, and slight vomiting, followed by a profuse perspiration.]

The *Cynanchum ipecacuanha*, Richard; *C. tomentosum*, Lin.; *Asclepias curassavica*, Lin.; *Periploca emetica*, Retz, &c.; all belonging to the family *Apocyneæ*, are used as substitutes for ipecacuanha, in the countries where they grow.

Mr. Loiseleur Deslongchamp's experiments tend to prove that several species of the family *Euphorbiaceæ*, natives of France, possess emetic properties for which they are indebted to the milky juice these plants contain. He advises, consequently, to administer, instead of the exotic ipecacuanha, the roots of *Euphorbia cyparisias*, Lin.; *E. gerardiana*, *E. sylvatica*, Lin., &c. None of these plants, however, have yet been used in France to any extent, nor do they contain a substance analogous to emetia.

CHAPTER X.

PURGATIVE REMEDIES.

Under the name of purgatives were once designated all the remedial substances capable of accelerating or producing alvine evacuations; but as this property belongs also to substances, the modus operandi of which is very different, they have been divided into two classes, the *purgatives*, properly so called, and the *laxatives*, of which we intend to speak in the sequel of this work. We now give the name of purgative or *cathartic*, (from Καθαίρω, I purge,) to a remedy which induces, on the internal surface of the intestines, a transient, moderate, and special irritation, producing alvine evacuations.

It appears, from the latest experiments, that some substances, when introduced into the circulation, produce the phenomena of purgation in the same manner as when they act locally upon the intestinal mucous membrane; but they are seldom administered in this way. Indeed, it is on their local action that depends the principal medication they generally produce. Their contact induces an increase of sensibility, irritation, and tumefaction of the mucous membrane which lines the intestinal canal; the secretion, of which this membrane is the seat, becomes more abundant; the excitation is extended to the liver, and promotes a greater affluence of bile in the digestive tube; the muscular coat participates also in this latter effect; the contractions of its fibres are accelerated, and finally expel briskly the matters contained in the intestines.

Purgatives may successively produce the irritation upon which these phenomena depend, over the whole extent of the intestinal canal, or act only in a very limited manner upon one of its parts. Colchicum is an instance of the first case; aloes of the second. In fact, this latter substance affects more especially the large intestine. However, their administration is generally followed with a disgust for aliments, and even nausea, with a sensation of internal heat, with more or less lively pains in the abdomen, borborygms, and a slight swelling of the belly. These phenomena are attended with general symptoms which deserve to be noticed; the pulse becomes weak and irregular, at the same time that the patient is more violently griped. It soon after acquires a greater strength and frequency; the animal heat increases, and the skin becomes dry and warm. The number of the alvine eva-

cuations produced during the action of the purgatives, varies, as well as the nature and quantity of the matter passed.

According to the degree of energy with which purgatives act, they have been designated by the names of *Laxatives*, *Minoratives*, or *Eccoprotics*, (ἐκ, out, and κόπρος, excrements,) of *cathartics*, which keep a medium between the laxatives and the *drastics*, (δραστίκος, δράω, I operate powerfully.) The latter are the most violent purgatives.

Besides the effects which we have mentioned above, purgative remedies may produce important secondary effects.

1st. The diminution of the activity of the circulation is not only produced by the evacuation of the alvine matters accumulated in the intestine, and by thus putting a stop to a cause of general irritation, but also by diminishing the mass of blood in circulation, in consequence of the increase of the secretion they induce. In fact, Mr. Robinson, who has performed a great number of experiments on perspiration and other secretions, has found that a strong purgation may diminish from two to three pounds the weight of the body.

2d. The greater activity of absorption which takes place in the cavities of the human body. This phenomenon is likewise a consequence of the increase of the secretion, of which the intestinal mucous membrane is the seat. For, as we have already mentioned, absorption seems always to be the more rapid, in proportion as the mass of humours in circulation is smaller. The purgatives which were administered with the view of increasing absorption in cases of partial or general dropsies, were called *Hydragogues*, (ὑδωρ, water, and ἄγω, I expel.)

3d. The increased secretion of bile. This phenomenon has given rise to the appellation that some purgatives have received, that of *Cholagogues*, (χολη, bile, and ἄγω, I expel.)

4th. Finally, a powerful revulsion, tending especially to diminish the determination of blood towards the head.

It is in order to obtain one of these effects that purgatives are administered in certain dropsies, in liver complaint, catarrhal affections, certain fevers, apoplexy, hysteria, diseases of the skin, &c.

Purgatives are furnished by the mineral and vegetable kingdoms. The first are neutral salts, most of which have for base soda, potassa or magnesia. They are soluble in water, have a fresh, salt or bitter taste. Their action upon the economy is pretty uniform; they produce an abundant secretion of serosity, and act especially upon the stomach, the small, but very slightly upon the large intestine. Indeed, their exhibition is not followed with costiveness, as is the case with certain vegetable substances. Finally, when they are absorbed, they generally produce a more

abundant secretion of urine. They are commonly administered in a watery solution, and in doses of from four drachms to one ounce.

The purgatives furnished by the vegetable kingdom act in general with greater violence, and irritate the intestines more than the saline purgatives. Most of them possess an odour more or less nauseous, and a bitter taste. Lastly, they principally contain resin, gummo-resinous matters, and bitter extractive principles. Their mode of administration and doses vary, as we shall see hereafter.

Mineral Purgative Substances.

Sulphate of Soda. *Sodæ sulphas.* Glauber's salt. This salt exists in the waters of several mineral springs.

P. P. It is in long six-sided prismatic crystals, fluted, white, transparent, very efflorescent, inodorous, of a bitter, cold, and salt taste, and of the specific gravity of 2.246.

C. P. According to Berzelius, it is composed of sulphuric acid, 24.64; soda, 19.36; and water of crystallization, 59. It is very soluble in water, at 33° Centig. (91° Fahr.) and its solubility diminishes above and below this point. Heated, it melts in its water of crystallization, and, at a high temperature, it passes to the ignited fusion without being decomposed.

Incomp. Subst. The salts of baryta, of lead, &c.

Prep. By decomposing carbonate of soda by sulphuric acid.

[Nearly all the Glauber's salt consumed in America is prepared from the sea-water, and principally at the large salt-works of Massachusetts. This salt is obtained only in the winter, and seems not to exist in solution in the sea-water, but to be formed by the mutual decomposition of the solutions of sulphate of magnesia and chloride of sodium at a freezing temperature. In fact, during the extreme cold weather, a crystalline deposit, consisting chiefly of sulphate of soda, is formed in the pickle vats, whilst at temperatures above freezing, no other salts are obtained from the same menstruum except muriate of soda, sulphate of magnesia, hydro-chlorates of magnesia and lime, &c.; *but no sulphate of soda.* That crystalline deposit is taken out with iron rakes, having strainers attached to them, and is purified, for sale, by crystallization; the best formed crystals are sometimes dried and sold in their impure state.*]

Th. E. It is a very gentle purgative, and its action is constant, and produces very little irritation. It is much resorted to in all the cases requiring the exhibition of mild purgatives, and espe-

* [See Mr. D. B. Smith's essay on the preparation of Glauber's and Epsom salt and magnesia, from sea-water, in the first number of the Journal of the Philadelphia College of Pharmacy, first series.]—Am. Eds.

cially in febrile affections, jaundice, cutaneous diseases, &c. Administered in doses insufficient to act as a cathartic, it is absorbed, and exercises a very decided diuretic influence.

D. & M. of Adm. As a cathartic, from ʒj. to ʒij. in ℔j. of water. As a diuretic, from ℈iij. to ℈v. with one-third of nitrate of potassa in ℔ij. of water, three or four times a day.——*Royal ptisan*, P. (Sulphate of soda, senna leaves, and pimpinel, āā. 4; aniseed and coriander, āā. 1; boiling water, 250; lemon, q. s.) ——*Purgative draught*, Paris H. (Sulphate of soda, ʒss.; senna leaves, ʒij.; water, ʒiv.; buck-thorn syrup, ʒj.)——*Purgative injection*, Paris H. (Sulphate of soda, ʒss.; senna leaves, ʒiij.; boiling water, ℔ij.)

Sulphate of Magnesia. *Magnesiæ sulphas.* Epsom salt. Seidlitz, or Egra salt. Bitter cathartic salt. It is found in solution in the sea-water and in that of several mineral springs, and particularly in that of Epsom, in England, in that of Bedford Springs, and in some springs in Kentucky.

P. P. This salt is solid, in four-sided prismatic crystals, or in masses composed of a great number of small needles, white, inodorous, of a bitter and disagreeable taste, and of the specific gravity of 1.66.

C. P. It is composed of sulphuric acid, 32.405; magnesia, 16.705, and water of crystallization, 50.890. It dissolves in its weight of cold water, and in a smaller proportion of boiling water. It is insoluble in alcohol. It effloresces in the air, and melted, it experiences the watery, but not the ignited fusion.

Incomp. Subst. The metallic oxides of the second class, the hydro-chlorates of baryta, of ammonia and lime, the sub-carbonates of potassa and soda, the acetate of lead, the nitrate of silver.

Prep. By evaporating the mineral waters which contain it, as is done in the case of those of the Epsom springs.

[The English sulphate of magnesia is now almost entirely superseded by that of our own manufactures: the salt-works of the eastern states, and those of the Baltimore chemical works, furnish the nine-tenths of Epsom salt consumed in this country, and even a considerable quantity is exported. In the large salt-works of Massachusetts, it is prepared from sea-water by the following process:—The brine is pumped into vats of the capacity of about a thousand hogsheads, in which it is concentrated by evaporation in the sun to the strength of a saturated solution. It is then drawn off into a second vat, called the pickle vat, of about half the size of the first, in which it is cleared from impurities, and thence transferred to a third, still smaller vat, in which the evaporation is finished and the common salt is formed. When crystals of Epsom salt begin to deposit, the mother-water is drawn off and kept under the name of bitterns, for the Epsom salt and magnesia works.

The bittern consists chiefly of sulphate of magnesia and hydrochlorates of magnesia and lime, the two latter of which do not easily crystallize. It is evaporated slowly, and the Epsom salt may be obtained very pure, with proper care and washing. When evaporated too hastily, it is mixed with hydro-chlorate of magnesia, a very bitter and deliquescent salt.*

The Epsom salt of the Baltimore chemical works, is obtained by treating directly with sulphuric acid, a magnesian mineral found in large quantities at Bare-Hill, in the neighbourhood of Baltimore, and in Lancaster county, Pennsylvania. This mineral, called *magnesite*, is composed of magnesia, 68.0; silex, 15.6; carbonic acid, 12.0; water, 3.0; sulphate of lime, 1.60.]

Th. E. It is used as a mild purgative, in the same cases as the preceding. It possesses exactly the same properties. It is more commonly used in England than in France.

D. & M. of Adm. From ʒij. to ʒij., in an aqueous menstruum.——*Mistura salina cum ferro*, Guy's H. (Sulphates of magnesia and soda, āā. ʒv.; sulphate of iron, gr. ij.; boiling water, Hbij.) Dose, from ʒiv. to ʒviij., two or three times a day.——*Aqua sulphatis magnesiæ cum acido carbonico*, F. (Sulphate of magnesia, 3; common water, 22; water, charged with carbonic acid, 11.)

Sulphate of Potassa. *Potassæ sulphas.* Vitriolated tartar. Glazier's polychrest salt. It exists in solution in some mineral waters.

P. P. This salt is in four or eight-sided prismatic crystals, short, white, unalterable in the air, it decrepitates when thrown on live coals, is of a slightly bitter taste and of the specific gravity of 2.4073.

C. P. It is composed, according to Berzelius, of 45 of sulphuric acid and of 55 of potassa. It dissolves in 16 of cold and 5 of boiling water. Insoluble in alcohol. Heated, it melts above a red heat, without undergoing decomposition.

Incomp. Subst. The same as for the sulphate of soda.

Th. E. It is a very weak purgative, on account of its insolubility, and is therefore less employed than the preceding. However, in very small doses, it is administered with success after delivery, in order to diminish the secretion of milk, in women who do not suckle their children. It is exhibited likewise, in the same manner, in cases of obstructions of the viscera, in chronic affections of the liver, certain dropsies, &c.

D. & M. of Adm. As a purgative, ʒiv. to ʒj., in solution. As an alterative, gr. x. to ʒj., in powder or dissolved in an acidulated menstruum.

* [See Mr. D. B. Smith's essay on the preparation of Glauber's and Epsom salt and magnesia, from sea-water, in the first number of the Journal of the Philadelphia College of Pharmacy, first series.]—Am. Eds.

NEUTRAL TARTRATE OF POTASSA. *Potassæ tartras.* Soluble tartar. This compound does not exist in nature.

P. P. It crystallizes in four-sided rectangular prisms; it is slightly deliquescent, of a bitter and cool taste, and of the specific gravity of 1.556.

C. P. It is composed of tartaric acid, 58.69, and potassa, 41.31. It is soluble in its weight of cold water, and still more so in this menstruum when boiling; it is likewise soluble in alcohol. Heated, it melts in its water of crystallization, puffs up, and finally is decomposed.

INCOMP. SUBST. All the acids, even the weakest, transform it into a supertartrate. It is completely decomposed by lime water, hydro-chlorate of baryta, the salts of lead, &c.

PREP. It is obtained by saturating with carbonate of potassa, the excess of acid of the cream of tartar.

TH. E. It is a mild purgative, of a prompt operation, and not apt to produce colics, as many other cathartic substances do. It is frequently used in the same cases as the preceding; and in England it is often associated with resinous purgatives in order to facilitate their action.

D. & M. OF ADM. ʒij. to ʒj., dissolved in an aqueous menstruum, without acid.

TARTRATE OF POTASSA AND SODA. *Potassæ et sodæ tartras.* Seignette's or Rochelle salt. It is always the product of art.

P. P. This double salt is in eight or ten unequally-sided prismatic crystals, transparent, unalterable in the air, of a slightly bitter taste and of the specific gravity of 1.757.

C. P. It is composed of 54 of tartrate of potassa, and 46 of tartrate of soda. It dissolves in 5 parts of cold and 1 of boiling water. It is decomposed by heat, after having experienced the aqueous fusion.

INCOMP. SUBST. The same as the preceding.

PREP. It is obtained by saturating the excess of acid of the cream of tartar with carbonate of soda.

TH. E. It acts in the same manner, and is employed in the same cases as the tartrate of potassa.

D. & M. OF ADM. ʒj. to ʒjss., in an aqueous menstruum.——*Purgative saline mixture*, PARIS H. (Tartrate of potassa and soda, ʒvj.; tartar emetic, gr. j.; syrup of honey, ʒj.; orange flower water, ʒij.; water, ʒij.) By table-spoonful.

SUB-PHOSPHATE OF SODA. *Sodæ phosphas.* It exists in several animal liquids, principally in the serum of the blood; however, that which is used in medicine is always the product of art.

P. P. It is in oblong, rhomboidal crystals, or in small pearl-white, shining scales, very efflorescent, of a slightly salt taste, and of the specific gravity of 1.333.

C. P. This salt is composed of phosphoric acid, 20.41; soda, 17.88; water of crystallization, 61.71. It dissolves in three parts of cold and two of boiling water. Heated, it passes successively from the watery to the ignited fusion, and furnishes by the latter an opaque, vitreous matter of a milky whiteness. Finally, it turns green the syrup of violets.

Incomp. Subst. The sulphuric, nitric, and hydro-chloric acids, lime, magnesia, and hydro-chlorate of baryta.

Prep. It is obtained by pouring an excess of sub-carbonate of soda into a solution of bi-phosphate of lime.

Th. E. It is a very gentle purgative, frequently used in France, on account of its taste being less unpleasant than the other purgative salts. It is employed to fulfil the same indications as the preceding saline substances.

D. & M. of Adm. ℥j. to ℥ij. dissolved in a proper menstruum.

Purgative Mineral Waters.

All the waters of this kind possess a bitter and salt taste, and are generally indebted for their purgative properties to the presence of a considerable quantity of the hydro-chlorates or sulphates of soda, magnesia, and lime. They contain very little carbonic acid gas, or traces only of hydro-sulphuric acid gas, and very variable quantities of hydro-chlorate of lime, of the carbonates of lime or magnesia, and of vegetable and animal matters, &c. The springs that furnish these waters are either warm or cold.

Administered in small doses, these waters are tonic and stimulant, but in large quantities they become purgative. They are given internally in cases of gastric disorders; but are principally used in baths or shower-baths, as tonics, in certain cases of general debility, palsy, and other atonic diseases.

The purgative mineral waters mostly used, and which have the greatest repute in America or in Europe, are:—

[The Saratoga and Ballston Springs. The former of these springs has been known ever since 1784, but was not improved for extensive accommodation until 1803. The latter was discovered in 1787, and was soon after very much improved, with splendid accommodations of every description. These are the names of the two most celebrated springs in the state of New York; their locality being nearly in a parallel line with the Hudson river, at the distance of about twenty-five miles from it on the west side, and at a short day's journey from Albany.

The country around Saratoga differs but little from that in the neighbourhood of Ballston, except that the hills are not so high, and the valley more extensive. These springs are situated in

rather an elevated country; the atmosphere is by many degrees cooler than in the neighbourhood of the cities of the United States, generally; the nights are always cool and comfortable; the air is extremely clear, and, upon the whole, the situation and the surrounding country are healthy and pleasant. All the fountains in this great valley, which lie pretty much in the form of a crescent, as far as they have been examined, appear, with few exceptions or variations, to possess the same *qualities*, differing only in the proportion of the substances common to all, and which are as follows: carbonic acid gas, muriate of soda, carbonate of soda, carbonate of lime, carbonate of magnesia, a trace of iron and iodine.

It would be almost impossible to give a minute detail of all the fountains in this immediate neighbourhood, the names of the principal of which, however, are the Congress Spring, Lowe's Well, the Flat-rock Spring, the High-rock Spring, Spa, Sulphur Spring, the Hamilton, the Columbian, the President, &c. As the properties of these springs are nearly alike, we shall therefore only dwell on those which are considered most interesting. The water in each of these fountains arises from a bed of sand, intermixed with stiff blue clay, and overlaying calcareous and schistose rock. The water of these fountains is perfectly clear and transparent; as it issues from its source, it sparkles briskly, but in some more than others, which is produced by the escape of the carbonic acid gas; the same occurs when poured from one vessel to another. Its taste is saline with a slight degree of bitterness, and its effects on the economy purgative or aperient. See Professor Silliman's Letter in the Northern Traveller, page 137.]

[Lowe's Well, *Ballston.* The temperature of the water of this fountain is uniformly 52°, Fahr. The specific gravity is to that of distilled water, as 1008 to 1000, the temperature of both being 60°. A glass of this water, just taken from the well, has a saline and pungent taste, with an evident chalybeate property. It is so very pungent as to affect the palate, and produce, at first, a slight giddiness and exhilaration of spirits. This water is also used for bathing.

According to Dr. Meade's analysis of this fountain, one quart of its water may be stated to contain the following substances: Muriate of soda, gr. 43; carbonate of lime, 13½; carbonate of magnesia, 7½; muriate of lime, 4¼; muriate of magnesia, 2¾; oxide of iron, 1; carbonic acid gas, 60½ cubic inches; nitrogen, 2½.]

[Congress Spring, *Saratoga.* The physical properties of this water, are very similar to those of the Lowe's Well. Its

specific gravity is as 1012 to 1000. The taste of this water, however, is very saline, brisk, and pungent, much more so than the Ballston water, and rather more stimulating and acidulous.

Several chemists have given analyses of the water of this fountain, but there exists some discrepancies in their results. We shall therefore first select that made by Dr. Dana: viz. One quart of water affords, chloride of sodium, grs. 108.50; bi-carbonate of lime, 51.08; carbonate of magnesia, 8.00; carbonate of soda, 4.00; silex, with a trace of iron, 1.50; carbonic acid gas, 45.90 cubic inches; nitrogen, 1.80.

Since writing this article, we perceive that Mr. William Usher has discovered *iodine* in the water of this fountain. In order to prove its existence, it will only be necessary to concentrate this water to about one-twelfth of its volume, and a solution of starch is added, and then a small portion of sulphuric acid, in order to decompose, *(probably,)* the hydriodate of soda, the characteristic blue colour is immediately manifested; and if to this a solution of chlorine be added, the colour suddenly disappears. There is very little doubt, that to this substance, existing in this water, its efficacy, in some chronic diseases, and especially in scrofulous affections, is owing.

Dr. J. H. Steel has given since an analysis of the *Saratoga Springs*, which may be classed among the *acidulous saline chalybeate.* According to Dr. S. one gallon of this water, just taken from the well, contains, the following ingredients, viz. muriate of soda, grs. 227.3; hydriodate of soda, 3; carbonate of soda, 19.21; carbonate of lime, 92.4; carbonate of magnesia, 23.1; oxide of iron, 5.39; silica and alumina, *(probably,)* 0.6; carbonic acid gas, 316 cubic inches; atmospheric air, 4.

Dr. Steel observes, also, that *iodine* may exist in a mineral water in the state of *iodic* or *hydriodic* acid, combined with either of the alkalies, potassa or soda, forming the iodate or hydriodate of the alkali with which they are united.]

[Ballston Spa is situated about seven miles in a south west direction from the springs at Saratoga. The water is very clear and sparkling, and when drunk betrays its chalybeate and gaseous properties to the taste. Dr. Steel remarks, that from the repeated application of the several reagents to the waters of this fountain, they appear to contain no properties to distinguish them from the waters of Saratoga. Its temperature is 50°, and one gallon, or 232 cubic inches, on a careful analysis, yielded the following result: Muriate of soda, 159; carbonate of soda, 9; carbonate of lime, 75.5; carbonate of magnesia, 2.5; carbonate of iron, 7; carbonic acid gas, 210 cubic inches.]

[New Mineral Spring at Albany. This spring was discovered in the summer of 1826, in a very singular manner. Messrs. Boyd and M'Culloch, anxious to procure water for their brewery, were induced to bore for it in the lower part of the city; when they had proceeded to the depth of 480 feet, instead of obtaining fresh water, the fluid which ascended had a peculiar saline taste, and a sparkling appearance. Its temperature is uniformly from 51° to 52° Fahr. specific gravity as 1010 to 1000. This water is purely saline, somewhat pungent, rather agreeable. If left to stand for a little while, the water, which at first was transparent, becomes perfectly opaque, having, however, formed previously a pellicle on its surface, which falls to the bottom, and then loses its agreeable and acidulous taste, becoming perfectly vapid, and tastes like a solution of marine salt in water.

According to Dr. Meade's analysis, it contains the following articles, but, in order the better to understand its properties, we shall give also Dr. M.'s analysis of the Congress Spring, and of the Public Well at Ballston. The following are the contents of each in one pint of water.

Congress Spring.	Grs.	*Public Well, Ballston.*	Grs.	*Albany Water.*	Grs.
Muriate of soda, -	51½	Muriate of soda, -	21	Muriate of soda, -	59
Carbonate of lime,	13¾	Carbonate of lime,	4⅝	Carbonate of soda,	5
Magnesia, - - -	8½	Carb. of magnesia,	5⅝	Carbonate of lime,	4
Muriate of lime, -	1¾	Muriate of lime, -	1¾	Carb. of magnesia,	1½
Muriate of magnesia,	2½	Muriate of magnesia,	¾	Carbonate of iron,	1
Oxide of iron, - -	¼	Oxide of iron, - -	½	Muriate of lime, -	½
Total,	78¼	Total,	34½	Total,	71
Carbonic acid gas, cubic inches, -	33	Carbonic acid gas, cubic inches, -	30½	Carbonic acid gas, cubic inches, -	26

[Bedford Mineral Springs, Pa. Bedford is a village situated on the great western turnpike from Philadelphia to Pittsburgh, a few miles east of the chief elevation of the Alleghany mountains. The springs, the chalybeate excepted, are located about two miles south of Bedford, in Shover's valley, which is watered by a creek bearing the same name.

The principal springs are *Anderson's*, *Fletcher's*, the *Limestone* spring, the *Sweet* springs, the *Sulphur* spring, and the *Chalybeate* spring. These springs are distant from Philadelphia 195 miles, and from Baltimore, or Washington city, 130 miles.

Anderson's. The waters of this spring issue, in a very copious stream, from a fissure in a limestone rock. The water is clear, lively, and sparkling. Its temperature was of 58° Fahr.

whilst the thermometer stood at 70°. Its specific gravity is 1029. It has a peculiar saline taste, resembling a weak solution of Epsom salt in water, and impregnated with carbonic acid. This water is inodorous. On exposure in an open vessel it becomes vapid.

According to Dr. W. Church, a quart of this water yielded the following substances:—

Sulphate of magnesia, 20 grs.; sulphate of lime, 3¾; muriate of soda, 2½; muriate of lime, ¾; carbonate of iron, 1¼; carbonate of lime, 2; loss, ¾; carbonic acid gas, 18½ cubic inches.

Fletcher's. This fountain furnishes also a very abundant supply of water. Its temperature was 55° Fahr. while the thermometer stood at 70°. Dr. Church's experiments on this water come nearly to the same results as with the preceding. He remarks, however, that it contains rather more iron and common salt, and less magnesia. All the other remarks made about Anderson's spring are equally applicable to this spring.

These waters are exhibited in a great many affections, but particularly in chronic diseases, as are almost all the fountains of this description.]

[Saline Springs, Big Bone. These fountains, several in number, are situated in the state of Kentucky, near the banks of the Ohio, twenty-two miles south-west of Cincinnati. Previous to the discovery of the *saline* springs on the great Kenhawa, which afford a great quantity of salt, the water of these springs was also employed in the manufacture of salt. It holds in solution, besides *common salt*, *muriate of lime*, *sulphate of soda*, or *magnesia*, and a few other salts of less activity, but no *iron*. These springs yield a great quantity of *sulphuretted hydrogen gas*, which continually escapes in bubbles; and seem also to contain some *gallic acid*, from their effects on the sulphate of copper and iron. The temperature is 57°. The taste and smell are sulphurous, and offensive to new comers, but this effect is transient, and soon after a taste of common salt predominates. They have no action on the circulation, but their effects on the alimentary system, kidneys, and skin, are very great. They frequently produce in a few days a violent itching, followed by an eruption of pimples or pustules, which are sometimes accompanied with large *boils*. These waters can never be serviceable to debilitated persons; but may be useful, and at times peculiarly adapted to torpor, or obstruction produced by acute disease in the lungs, or, in a word, in any of the viscera, which is of short standing, and has not exhausted the patient. From a pint to a gallon may be taken daily; the quantity drunk at first ought to be, however, very small.]

Balaruc, a French village in the department of Hérault. The spring is situated near a salt pond, communicating with the Mediterranean Sea. The waters of this spring have a slight sulphurous smell, and their temperature is 47.5° Centig. (113° Fahr.) According to Mr. Figuier, 6 kilogrammes of this water contain carbonic acid, 36 cubic inches; hydro-chlorate of soda, 45.05; of magnesia, 8.25; of lime, 5.47; carbonate of lime, 7.00; carbonate of magnesia, 0.55; sulphate of lime, 4.20; and traces of iron. According to Mr. Pierre, a great quantity of nitrogen gas disengages from the spring.

Artificial Balaruc water, P. Water containing twice its volume of carbonic acid, 650; hydro-chlorate of soda, 6.0; hydro-chlorate of lime, 0.9; hydro-chlorate of magnesia, 2.8; and carbonate of magnesia, 0.05.

D. & M. of Adm. As a purgative drink, from 2 to 3 quarts; as a stimulant, 3 or 4 tumblerfuls a day.
Externally. In baths, lotions, water-baths, &c.

Bourbonne-les-bains, a small town of the department of Haute-Marne. There are several springs, the waters of which when agitated, exhale a slight smell of rotten eggs; their temperature varies in the different reservoirs from 40° to 56° Centig. (from 104° to 133° Fahr.) According to Mr. Athenas, a quart of this water contains hydro-chlorate of soda, 88 grains; hydro-chlorate of lime, 16; hydro-chlorate of magnesia, 3; sulphate of lime, 19; sulphate of magnesia, 7; carbonate of iron, $\frac{1}{8}$; besides free carbonic acid, &c.

Bourbonne-les-bains artificial mineral water, P. Water containing twice its volume of carbonic acid, 650; hydro-chlorate of soda, 4; hydro-chlorate of lime, 0.5.

D. & M. of Adm. As a drink, from 3 tumblerfuls to $1\frac{1}{2}$ quarts, gradually.

Epsom, an English borough, twenty-one miles from London, possesses a cold spring, the waters of which are limpid, salt, and bitter. They contain 0.03 of sulphate of magnesia, which is obtained by evaporation and found in commerce under the name of *Epsom salt*. This water is used to fulfil the same indications as Seidlitz water.

D. & M. of Adm. As a drink, from two to four tumblerfuls a day.

Seidlitz, a village of Bohemia, in the vicinity of Prague. The waters of this spring are limpid, sparkling, of a bitter and salt taste. Specific gravity, 1.0060. Their temperature is 15° Centig. (59° Fahr.) According to Hoffmann's analysis, in five pounds

they contain sulphate of magnesia, 1410 grs.; sulphate of soda, $34\frac{4}{9}$; sulphate of lime, $25\frac{1}{16}\frac{3}{}$; carbonate of lime, $9\frac{1}{16}$; carbonate of magnesia, $6\frac{1}{4}$; carbonic acid, 6; and resinous matter, $3\frac{3}{4}$.

Weak artificial Seidlitz water, P. Water containing three times its volume of carbonic acid, 650; sulphate of magnesia, 8; hydro-chlorate of magnesia, 0.9.

Strong artificial Seidlitz water, P. Contains double the quantity of saline matters.

D. & M. of Adm. As a drink, from 1 to 4 tumblerfuls in the morning.

Vegetable Purgative Substances.

Family Convolvulaceæ.

Jalap. *Jalapæ radix. Convolvulus jalapa*, Lin. A plant growing in Mexico, and generally in South America. P. U. The root.

B. C. Stem herbaceous, sarmentose, of the size of a quill, from fifteen to twenty feet long; leaves smooth on the upper surface, hairy underneath, subcordiform; flowers violet, pedunculate, axillary, solitary; corolla infundibuliform, with plaited border; style filiform, stigma bi-lobed; fruit ovoid, roundish, of the size of a hazel-nut, generally four-celled, each cell containing two or three triangular seeds covered with silky hair.

P. P. The fresh root is fusiform, rounded, white and milky; that found in commerce is in slices or round pieces, compact, heavy, rough, of a dark brown externally, grayish internally, marked with concentric lines; its fracture is smooth, undulated and intermixed with shining points; its taste is weak at first, then acrid, and it irritates the parts it touches; its odour is peculiar, and slightly nauseous. The pulverized jalap is of a yellowish-brown colour, and is powerfully errhine.

C. P. According to Mr. Felix Cadet de Gassicourt, this root contains in 500 grammes, resin, 50; gummous extract, 220; fecula, 12.5; albumen, 12.5; lignin, 1.45; water, 24; salts with base of potassa and lime, 14.2; silica, 2.7; carbonate of iron, 0.105; and loss, 16.995. Other analyses show that the quantity of resin, which appears to be the active principle of jalap, may vary considerably. Mr. Hume has noticed a white, crystalline precipitate, which he has called *jalapin*, and which he considers as a new vegetable alkali, capable of forming salts with acids. But according to Mr. Chevallier's experiments, this substance is nothing but *inulin*, and has none of the virtues of jalap. Water, alcohol, and ether, dissolve its active principles.

Th. E. The purgative action of this substance is principally spent on the small intestines. In small doses it does not gripe,

and most commonly does not produce any remarkable general phenomena; in large doses, on the contrary, it causes vomiting, violent colics, and induces a phlegmasia of the gastro-intestinal mucous membrane. It is considerably used, owing to its energetic action and moderate price. It is frequently associated with other purgatives.

D. & M. of Adm. *Powder*, gr. xii. to ʒss., in pills or in suspension in a proper menstruum.——*Pulvis jalapæ compositus*, U. S., E. (Jalap, 1 part; supertartrate of potassa, 2 parts.) Dose, from ℈j. to ℈ij.—P. (Jalap and scammony, āā. 1; supertartrate of potassa, 2.) Dose, from gr. xv. to ℈j.—Pol. (Jalap, 2; sulphate of potassa, 1.)—F. (Jalap and gentian, āā. 4; ginger, 1; sulphate of magnesia, 8.)—New York H. (Jalap and calomel, āā. equal parts.) Dose, from ℈ss. to ℈j.—Guy's H. (Jalap, ℥j.; tartrate of potassa, ℥ij.; red pepper, gr. xij.) Dose, from ʒss. to ʒj.——*Anthelmintic powder*, Paris H. (Jalap, gr. xxx.; rhubarb, gr. vj.; calomel, gr. ij.)—Dose, from gr. xij. to ℈j.——*Dr. Paris' purgative powder.* (Jalap, gr. xv.; ipecacuanha, gr. v.; essential oil of cinnamon, gut. ij.) For a dose.——*Pilulæ jalapæ compositæ*, U. S. (Jalap, rhubarb and Castile soap, āā. ʒj.; sub-muriate of mercury, ʒvj. and ℈ij.; tartarized antimony, gr. xxviij.)——*Dr. Paris' purgative bolus.* (Jalap, gr. xv.; calomel, gr. v.; conserve of roses, q. s.) For a bolus.——*Extractum jalapæ*, U. S., L., E., D. Dose, from gr. x. to ℈j.——*Tinctura jalapæ*, U. S., L. (Jalap, ʒviij.; alcohol, Oij.) Dose, from ʒss. to ʒij.—E. (Jalap, 1; alcohol, 5.) Dose, from ʒj. to ʒiv.—D. (Jalap, ℥v.; proof spirit, Oij.)—B. (Jalap, 1; alcohol, 6.) Dose, from ʒss. to ʒiij.——*Tinctura cathartica*, Den. (Jalap, 1; seneka, 4; alcohol, 72, sugar, 8.) *Eau de vie allemande*, P. (Jalap, 8; turpeth root, 1; scammony, 2; alcohol, 96.) Dose, from ℥ss. to ℥j., in an emulcent drink.)——*Syrup of jalap*, P. (Jalap, 20, coriander and fennel seeds, āā. 1; water, 200; sugar, 400.) Dose, from ʒij. to ℥ss.

Resin of Japap. *Resina jalapæ*, is obtained from the above described root. It is of a greenish brown colour, brittle, of a shining fracture, of a virose smell, of a taste slightly perceptible at first, then acrid and unpleasant. Its action is much more energetic than that of jalap, of which it seems to be the active principle. It is administered in similar cases as the root, which is, however, generally preferred to the resin on account of its more certain and milder action. The dose is from gr. ij. to x. in pills, or suspended in an emulsion.

Aleppo Scammony. *Gummi-resina scammonium.* A gum resin obtained from the *Convolvulus scammonia*, Lin. A perennial plant growing in Asia.

B. C. Root elongate, fleshy, lactescent; stem slender, hairy, from four to five feet high; leaves alternate, hastate, smooth, entire; flowers red, from three to six on the ramifications of an axillary peduncle.

P. P. This substance is found in commerce in masses of moderate size, of a deep gray colour, and friable; its fracture is dull and opaque, its odour is strong and peculiar, its taste bitter, acrid, and its specific gravity, 1.235.

C. P. According to Messrs. Bouillon-Lagrange, and Vogel, it is

composed of resin, 60; gum, 3; extractive, 2; impurities, 35. It is soluble in alcohol. Triturated with water, it forms a sort of emulsion of a dirty greenish-yellow colour, in which one-fourth of the resin appears to be dissolved.

Th. E. Scammony is a very energetic drastic purgative, acting quickly. On account of the lively irritation it produces on the mucous surface of the intestines, it is proper to administer it only in small doses. It is exhibited in cases of obstinate costiveness, produced by the atony of the intestinal canal, and especially in passive dropsies, in order to provoke copious alvine evacuations. It was formerly said, that under these circumstances it was an hydrogogue.

D. & M. of Adm. *Powder*, gr. j. to vj. and gradually to xij. and xv.——*Pulvis scammonii comp.*, L. (Scammony and extract of jalap, āā. 4; ginger 1.) Dose, from gr. x. to xv.—U. S., E. (Scammony and tartrate of potassa, āā. equal parts.) Dose, from gr. x. to ʒss.——*Pulvis scammonii cum hydrargyro*, Guy's H. (Scammony, ʒij.; calomel and sugar, āā ʒj.) Dose, from gr. x. to xx.——*Dr. Paris' purgative powder*, (Scammony, gr. v.; rhubarb, gr. xv.; sub-carbonate of ammonia, gr. vj.) For a dose, to be taken in a suitable menstruum.——*Purgative emulsion*, P. (Scammony, 1; sugar and orange-flower water, āā. 12; simple emulsion, 80.) Dose, from ℥ij. to iv.——*Compound scammony and senna lozenges*, P. (Scammony, 6; senna leaves, 9; rhubarb, 3; cloves, 2; preserved lemon peel, 16; sugar, 108; for lozenges of 6 drachms each.) Dose, from ʒj. to ʒij.——*Confectio scammonii*, L. (Scammony, ʒjss.; cloves and ginger, āā. ʒvj.; essential oil of caraway seed, ʒss.; sugar, q. s.)—U. S.——*Electuarium scammonii*, D. (Scammony and ginger, āā. ʒj.; oil of cloves, f.℈j.; syrup of orange peel, a sufficient quantity.) Dose, from ʒss. to ʒj.——*Tinctura*, P. (Scammony 1; alcohol, 4.) Dose, from ℈j. to ʒj., in any menstruum.——*Syrupus*, P. (Scammony, 1; sugar and violet syrup, āā. 8; alcohol, 16; one ounce contains eighteen grains of scammony.) Dose, from ʒj. to ʒiv.

Smyrna Scammony is furnished by the *Periploca secamone*, Lin. a sarmentose shrub of the family *Apocyneæ*, growing in the same places as the *Convolvulus scammonia*. It is heavier, less brittle, of a deeper colour, and more disagreeable odour than the preceding. It contains only twenty-nine per cent. of purgative resin, the remainder consists of gummous matter and impurities. It is consequently much less active and less valuable than the Aleppo scammony.

The Spurious Scammony, or Montpellier Scammony, is obtained from the *Cynanchum monspelliacum*, Lin. a small shrub of the family *Apocyneæ*, growing abundantly in the vicinity of Montpellier. It is in flat pieces, almost black, very hard, compact, of a dull fracture, and its smell is not unpleasant. It is now almost out of use, owing to the uncertainty of its action.

Mechoacan. *Mechoacannæ radix. Convolvulus mechoacan*, Lin. A plant growing in Mexico, in the province of Mechoacan. P. U. The root.

P. P. This substance is in irregularly globular pieces, of various size, or in circular slices two or three lines thick, and stripped of their bark. It is of a white colour inside, inodorous, and of a taste hardly sensible at first, but afterwards slightly acrid.

C. P. Mechoacan contains a considerable quantity of fecula, a very bitter, oily principle, soluble in alcohol, resembling very much the resin of Jalap.

Th. E. It is a weak and uncertain purgative, once much used, but now almost forgotten. It enters, however, into the composition of several officinal preparations, which are employed occasionally.

D. & M. of Adm. *Powder*, ℈j. to ʒj.

[Wild Potatoe. *Convolvulus panduratus*, Michaux. A native perennial plant, very common in sandy fields and among bushes. P. U. The root.

B. C. Root very large and oblong; stem pubescent, long, slender, and twining; leaves petiolate, cordate, entire or lobate, and panduriform; flowers two or three, on axillary and solitary peduncles, longer than the petioles; calix short, glabrous; corolla large, infundibuliform, almost campanulate, white, with a purple bottom forming a star on the white border.

P. P. Very large, sometimes of the size of a man's arm, and more than two feet long, covered with a brown skin, white inside, milky when fresh, and of an acrid taste.

C. P. It contains a large quantity of starch.

Th. E. This root has been used in place of jalap, with the same beneficial effect, but rather in a less degree; it seems to possess some hydragogue properties, and has been highly recommended in some parts of the United States, in cases of gravel. It is used either in powder or in decoction. Dr. Harris, of New Jersey, has found an infusion or decoction of the root very useful in his own person. He is persuaded that it has enabled him to pass the calculous granules with greater facility.]

Turpeth. *Turpethi radix. Convolvulus turpethum*, Lin. A perennial plant, nearly related to the preceding, and growing in the East Indies. P. U. The root.

P. P. Turpeth is in pieces of the length of the finger, compact, of a brownish-gray colour externally, whitish internally, with dark resinous streaks. The heart is frequently wanting, leaving but a hollow tube formed by the bark, which is very thick. By cutting this root transversely, it shows a multitude of small round holes, which gives to it the appearance of a bamboo stem. Its taste is nauseous, and its smell rather feeble.

C. P. This substance, like the preceding, contains resin, a fatty

matter, a volatile oil, albumen, and fecula. Alcohol takes up its active properties.

Th. E. It is a very energetic drastic purgative, but its action is uncertain. It was formerly used in the same manner as jalap; it is now no longer employed. It enters, nevertheless, into the composition of several officinal preparations.

D. & M. of Adm. Powder, gr. x. to ℈j. Decoction, ʒj. to ʒij. to ℔j. of water, and administered by tumblerfuls until it operates.

Soldanella. *Convolvulus soldanella*, Lin. A plant, native of Europe, and growing on the sea shore, the *C. sepium*, *C. arvensis*, Lin. and several other plants of the same family, contain a purgative resin similar to that of jalap; and, according to Messrs. Loiseleur Deslongchamps and Chevallier, they might be used with advantage as substitutes for the exotic purgative *Convolvuli*.

Family Podophylleæ.

[May Apple. Mandrake. *Podophyllum peltatum*, Lin. A native plant, exceedingly common in rich and shady woods. P. U. The root.

B. C. Stem from one foot to eighteen inches, upright, simple, and smooth, supporting two large leaves and a single flower in the fork formed by the junction of the petioles; leaves peltate, palmately divided, mostly into six large lobes attenuated towards the bottom; flowers white; calix, three-leaved; nine connivent petals; stigma crenate, sessile; capsule superior, one-celled, many-seeded, and becoming an ovate berry; fruit, lemon colour, at first nauseous; the internal pulp, when mature, is agreeably sub-acid and edible.

P. P. Root creeping, very long; when dried, it is hardly larger than a goose-quill, of a reddish-brown colour externally, and whitish internally, brittle, having a slight nauseous smell and a sweetish taste. The smell of the powder is nearly similar to that of ipecacuanha.

C. P. According to Dr. E. Staples, this root contains resin, starch, and a peculiar vegetable substance crystallizable in very white silky tufts. Its infusion reddens litmus in a very complete manner. Like jalap, its cathartic property resides chiefly in the resin.

Th. E. As a cathartic, this root is hardly inferior to jalap; it does not seem however to act as promptly, but its action lasts longer. It produces more distressing sickness at the stomach than purgatives generally, and frequently causes emesis. Its powers are heightened by its union with calomel or supertartrate of potassa, and griping or sickness at the stomach is often avoided by this combination. It has been highly recommended in cases of intermittent and remittent fevers, in dropsy, and as an anthelmintic it is used with much effect by our Indians. The medicinal

properties of the podophyllum peltatum, says Dr. Bigelow, are those of a sure and active cathartic, and for this property it deserves a high rank among our indigenous productions; we have hardly any native plant which answers better the common purpose of jalap, aloes, and rhubarb. The leaves are said to be poisonous.

D. & M. of Adm. Powder, from gr. xv. to ℈j. Infusion, from gr. xxx. to ʒj. in boiling water, f.ʒiv. for a dose.——*Extractum podophylli*, U. S. Dose, from gr. x. to xx.]

Family Caprifoliaceæ.

[Fever Root. *Triosteum perfoliatum*, Lin. A native perennial plant, met with in most parts of the United States, but rather scarce and solitary. P. U. The root.

B. C. Stems from two to four feet high, several arising from the same root; leaves large, oval, acuminate, connate; flowers sessile, verticillate, of a dark purple colour; calix five-cleft, persistent, nearly the length of the corolla which is five-lobed and sub-equal, base nectariferous, gibbous; stigma somewhat five-lobed; berry of a dark purple, three-celled, three-seeded, crowned with the calix.

This root, commonly called *bastard ipecacuanha*, possesses unquestionably some emetic and cathartic properties. Its effects have been tried by many physicians, who ascertained that in doses of from twenty to thirty grains it acted as a gentle cathartic, and sometimes as a diuretic, but in large doses it frequently produces emesis. An extract is prepared from it, which is exhibited in rather smaller doses than the root itself.]

Family Cucurbitaceæ.

Colocynth. Coloquintida. Bitter Apple. *Colocynthidis fructus. Cucumis colocynthis*, Lin. An annual plant, native of the Levant, and cultivated in gardens. P. U. The pulp of the fruit.

B. C. Stem fleshy, covered with rough hair, scandent and cirrhose; leaves reniform, five-lobed, the nerves covered with stiff hair; flowers monoicous, solitary, of an orange yellow; fruit globular, yellow, of the size of an orange, furnished with a thin and rough peel, containing a white pulp; seeds, oval, flattened, white, and very numerous.

P. P. Colocynth, such as is found in commerce, is in white, round, spongy, dry, and light masses, in the pulp of which are placed the seeds. Its taste is nauseous and extremely bitter, without scarcely any smell.

C. P. According to Mr. Vauquelin, this substance contains a resinoid matter, more soluble in alcohol than in water, which he calls *colocyntin*, and which is the active principle; another resin, insoluble and not bitter; a fatty oil, some gum, an extractive matter, and salts. Water, alcohol, and ether dissolve easily its active principles.

Incomp. Subst. Fixed alkalies, sulphate of iron, nitrate of silver, acetate of lead, &c.

Th. E. This substance irritates powerfully the parts with which it comes in contact. Administered internally, its action is principally felt by the stomach and rectum; and when the dose is too great, it produces a violent irritation of these organs. Even in small doses it proves one of the most energetic drastic purgatives. Its action is frequently attended with violent colics, thirst, and occasionally with vomiting, and bloody evacuations. Its irritant influence upon the rectum may be extended to the uterus, and thus excite the menses. Colocynth is exhibited with advantage in passive dropsies, and on every occasion when a powerful revulsion upon the large intestine is indicated. In these cases it is to be mixed with eight or ten grains of inert and insoluble powder, in order to diminish its very irritating action on the stomach.

D. & M. of Adm. Powder, gr. iv. to xij., and even ℈j. at most, mixed with gum Arabic, fecula, or other inert powder.——*Decoctum colocynthidis*, B. (Colocynth, and sulphuric ether, āā. 1; boiling water, 48; syrup of orange peel, 8.) Cochl. j., two or three times a day.——*Extractum colocynthidis*, P., L., Pol., F., Pr. Gr. iv. to xij., in pills, united with calomel, or other purgative substances.——*Extractum colocynthidis compositum*, U. S. (Colocynth, ℥vj. socotorine aloes, ℥jss.; scammony, ℥ss; cardamom, ʒj.; diluted alcohol, one pint.)—L., D. (Pulp of colocynth, 6; aloes, 12; scammony, 4; cardamom seed, 1; hard soap, 3; proof spirit, L.; water, D., 128; reduce to a proper consistence.——*Pilulæ colocynthidis compositæ*, F. (Extract of colocynth, 15; calomel, 6; resin of jalap, 4; cloves, 2; syrup, q. s.; for three grains pills.—E. (Aloes, and scammony, āā. 8; colocynth, 4; sulphate of potassa, oil of cloves, āā. 1; mucilage of gum Arabic, q. s.)—D. (Colocynth pith, ℥ss.; aloes and scammony, āā. ℥j.; Castile soap, ʒij.; oil of cloves, ʒj.; syrup, q. s.)——*Pilulæ colocynthidis extracti compositi*, U. S. (Compound extract of colocynth, ʒjss.; oxide of antimony, ℥ss.; for 30 pills.)——*Pilulæ colocynthidis cum hydrargyro*, Guy's H. (Compound extract of colocynth, ʒiv.; calomel, ʒj.; for 60 pills.) Dose, from No. j. to iv.——*Tinctura colocynthidis*, A. (Colocynth, 1; alcohol, 6.)—F., Pol., Pr., B. (Colocynth, 8; star-aniseed, 1; alcohol, 112.) Dose, from gut. x. to xv., in a mixture.

Elaterium. *Elaterii fructus. Ecbalium elaterium*, Rich. *Momordica elaterium*, Lin. A perennial plant, growing naturally in the south of France. P. U. The juice of the fruit.

B. C. Stem repent, ramose, hairy; leaves thick and cordiform; flowers monoicous, yellowish, in axillary spikes; fruit ovoid, elongate, of the size of the thumb, green, and covered over with rough hair; on getting ripe, these fruits separate from their peduncle by the least touch, and dart to a great distance, through the opening practised by the separation of the pedicle, the seeds they contain.

P. P. Elaterium is found in commerce in irregular, dry, and friable fragments, of a blackish-green colour, or in thin, hard scales, bearing on the surface the impression of the linen on which they have been dried; they are of a greenish colour, almost

inodorous, and of an acrid and bitter taste. This latter kind is much more active than the former.

C. P. This substance, according to Dr. Paris' analysis, contains *elatin*, united with a very bitter principle, 12; extractive, 26; fecula, 28; gluten, 5; water, 4; and lignous fibres, 25. Water and alcohol especially dissolve its active principles.

Elatin, for the discovery of which we are indebted to Dr. Paris, is the active principle of elaterium; the experiments of this physician leave no doubt upon this subject. This particular substance is soft, of a green colour, of an aromatic smell, of a weak taste, soluble in alcohol and alkalies, and insoluble in water. It operates powerfully in minute doses; but it is not generally used.

Prep. The first kind of the above described elaterium is obtained by evaporating, to the consistence of a dry extract, the juice expressed and clarified. The second is prepared by separating the sediment which forms in the juice obtained from the fruit by incision, and without expression, and drying it upon linen with a gentle heat.

Th. E. It is one of the most violent drastic purgatives; administered inconsiderately, it produces a very lively inflammation of the intestinal canal, attended with the most serious accidents. In minute doses, it purges violently, and is applicable in cases requiring very copious evacuations, as in the treatment of passive dropsies, especially in ascites and hydrothorax. It was once very much used; but is now, at least in France, almost entirely abandoned. It is occasionally used in the United States, but more frequently so in England; and Dr. A. T. Thomson, in the London Dispensatory, asserts it to be the best hydragogue he knows. However, its administration requires the greatest caution.

D. & M. of Adm. Powder, gr. ½, every hour until it operates, in pills, or suspended in a demulcent mixture. The dose must not be carried above gr. vj. or viij.——*Extractum elaterii*, L. Same doses.——*Pulvis elaterii compositus*, Guy's H. (Extractum elaterii, gr. iv., tartrate of potassa, ℈v.; ginger, ℈j.; 30 grs. contain 1 gr. of elaterium.) Dose, from gr. v. to x.

Bryony. *Bryoniæ radix. Bryonia alba*, Lin. A perennial plant, native of Europe, growing in hedges and uncultivated places. P. U. The root.

B. C. Stem herbaceous, climbing, ramose, from eight to ten feet long; leaves alternate, emarginate, and five-lobed; flowers dioicous; male, five stamina; female, ovary globular, style short, trifid, three transversal stigmas; fruit, a pisiform and reddish berry, containing from three to six seeds.

P. P. The fresh root of this plant is fusiform, frequently of a

considerable size, covered with a yellowish, thick, and transversely furrowed bark. Its parenchyma is compact, whitish, and divided into zones. Its taste is bitter and nauseous, and its smell viscous and unpleasant. This root is found in commerce, in a dry state, cut in large slices, white, and presenting very apparent, concentric striæ; its smell is much stronger in the fresh, than in the dry state.

C. P. This root, according to Mr. Dulong d'Astaford, contains *Bryonin*, a considerable quantity of fecula, a green concrete oil, resin, gum and salts, with base of lime and potassa. Water and alcohol dissolve its active principles.

Bryonin is pulverulent, and presents rudiments of crystals. It is soluble in water, and possesses the disagreeable taste of bryony root. According to Mr. Brande, it is reddish, intensely bitter, and soluble in alcohol. To this immediate principle the bryony is indebted for its action.

Th. E. Applied to the skin, the fresh root produces a very strong rubefaction, and even vesication. Administered internally, in strong doses, it acts like the irritant poisons, and occasions vomiting and copious and frequently bloody alvine evacuations. In small doses, it was formerly employed as a purgative and an emetic; but it is a dangerous and uncertain remedy, the exhibition of which is now almost entirely abandoned.

D. & M. of Adm. Powder, gr. xij. to ℈j. and even ʒss. Decoction, ʒiv. to ʒj. to ℔j. of water.——*Medicinal fecula of bryony*, P. Dose, from gr. xij. to ʒss.——*Expressed juice from the fresh root.* Dose, from ʒij. to ʒiv.

Family Liliaceæ.

Aloes. *Succus aloes*, inspissated juice of the leaves of several species of the genus *Aloe*, especially of the *Aloe perfoliata*, Lam., and *A. spicata*, Lin. Perennial plants growing in Africa, in the vicinity of the Cape of Good Hope, and cultivated in Barbadoes, &c.

B. C. Root fibrous; stem or scape two or three feet high, covered with sharp scales; leaves thick, succulent, from eight to ten inches long, of a green-glaucous colour, crowded at the base of the stem; flowers red, in an elongated spike, hanging, tubular; calix cylindrical; six stamina, adherent to the base of the calix; style terminated with a trilobed stigma.

P. P. We find in commerce three different species of aloes, designated by the name of *socotorine*, *hepatic*, *and caballine aloes.*

The *Socotorine aloes*, *Aloe socotorina*, is in deep brown pieces, friable, with a resinous and shining fracture, of a peculiar aromatic odour, and of a very bitter taste. Its powder is of a very brilliant golden yellow. It is the purest of the three species.

The *Hepatic* or *Barbadoes aloes*, *Aloe hepatica*, is distinguished by its deep red colour, more compact texture, and duller fracture, and by its smell nearly similar to that of gum myrrh. Its powder is of a dull reddish-yellow colour.

The *Caballine aloes*, *Aloe caballina*, which is very impure, and employed only in veterinary practice, is of a dark colour, quite opaque, of a rough and very compact fracture, of an unpleasant and fetid smell.

C. P. The socotorine aloes, according to Tromsdorff, is composed of bitter saponaceous principle,* 75; resin, 25; and a trace of gallic acid; it seems to contain besides a small quantity of essential oil. It is partly soluble in cold, and completely so in boiling water, from which it separates on cooling. It dissolves likewise in alcohol. The hepatic aloes, according to the same chemist, contains saponaceous principle, 81.25; resin, 6.25; albumen, 12.50; and a trace of gallic acid. Water, either cold or warm, do not dissolve it completely.

Prep. The socotorine aloes is obtained by cutting the leaves at their base, and keeping them in a vase with the cut side downwards. The yellowish liquor they have furnished is then collected together and evaporated in the sun or on a gentle fire. The quantity obtained by this process is very small but very pure. Most commonly, the three different species of aloes are prepared by a single operation. The leaves are bruised, the juice expressed from them, and the grounds boiled in water. The decoction is then strained off, and mixed with the juice already obtained. This liquor, after having previously undergone a coarse filtration, is evaporated to the consistence of an extract, and afterwards poured into tubs. The superior layers furnish the purest, or socotorine aloes; the middle one, the hepatic; and the inferior strata constitute the black or caballine aloes.

Th. E. In small doses, aloes acts on the stomach in the same manner as the tonic bitters; it stimulates the action of this organ, and promotes digestion. In larger doses, it proves an energetic purgative; but its effects occur only some time after its ingestion, because its action is principally spent upon the large intestine, which it may so far irritate as to produce then a real congestion. It is used with success in cases of habitual costiveness, proceeding from an atonic state of the intestinal canal, in jaundice, chlorosis, scrofulous affections, hypochondria, and generally, whenever a slow purgative effect is required, and a secondary tonic action is desirable. Advantage is taken of its well known action

* [The bitter principle of aloes seems to be a compound consisting of a resinous matter united with the carbazotic acid of Liebly, or aloetic acid of Braconnot. See No. II. of the Journal of the Philadelphia College of Pharmacy, second series.]—Am. Eds.

on the rectum, to maintain in this viscus a slight irritation, in persons inclined to cerebral congestions; and this same action, which may be extended to the uterus, is frequently very useful in promoting the return of the menses. Its administration is counter-indicated in individuals affected with piles; for, from what we have said of its action on the rectum, it is evident that it must aggravate the symptoms of this disease. Finally, it has been recommended as anthelmintic; but its effects in this respect are so uncertain, that it cannot be exhibited with any certainty of success.

D. & M. OF ADM. Powder, as a tonic, gr. j. to gr. iv.; as a purgative, gr. vj. to ℈j.——*Decoctum aloes compositum*, L. (Aloes, myrrh, and saffron, āā. 3; subcarbonate of potassa, 2; extract of liquorice, 12; compound tincture of cardamom, 96; water, 288.) Dose, from ℥j. to ℥ij. in the morning.——*Pulvis aloes compositus*, L., D. (Aloes, 3; resin of guaiacum, 2; aromatic powder, 1.)——*Pulvis aloes cum canella*, U. S., D. (Hepatic aloes, 4; canella alba, 1.) Dose, from gr. x. to gr. xx.——*Pilulæ aloeticæ*, U. S., P., E. (Aloes and soap, equal parts; water or simple syrup, q. s.) Dose, from gr. x. to xv.—GUY'S H. (Aloes, ʒiij.; medicinal soap, ʒj.; oil of peppermint, gut x.; for sixty pills.) Dose, from No. ij. to No. iv. a day.——*Pilulæ aloes et colocynthidis*, U. S. (Socotorine aloes, scammony, āā. ʒij.; sulphate of potassa, ʒij.; colocynth, ʒj.; oil of cloves, f.ʒij.)——*Pilulæ aloes cum myrrha et guaiaco*, U. S. (Socotorine aloes, ʒss.; saffron, myrrh, āā. ʒij.; gum guaiacum, oxide of antimony, āā. ʒss.)——*Pilulæ aloeticæ*, NEW YORK H. (Socotorine aloes, ʒvj.; ginger, ʒiv.; mucilage of gum Arabic, q. s.; for pills, No. cxx.)——*Pilulæ aloeticæ compositæ*, NEW YORK H. (Spanish soap, aloes, pulverized rhubarb, āā. ʒj.; mucilage of gum Arabic, q. s. for five grains pills.)——*Pilulæ aloes compositæ*, L., B. (Aloes, ʒj.; extract of gentian, ʒss.; essential oil of caraway, ♏xl.; simple syrup, q. s.)——*Pilulæ aloes cum zingibere*, D. (Hepatic aloes, ʒj.; ginger, ʒj.; medicinal soap, ʒss.; oil of peppermint, f.ʒjss.) Dose, from gr. x. to xv.——*Pilulæ aloes cum myrrha*, formerly *Pilulæ rufi*, U. S., P., L., E., D., B., GUY'S H. (Aloes 4; myrrh, 2; saffron, 1; simple syrup, q. s.) Dose, as a cathartic, from ℈j. to ℈ij.; as a stimulant, from gr. x. to ℈j.——*Pilulæ aloes et cinchonæ*, P. (Aloes, 6; extract of bark, 3; cinnamon, 1; syrup of wormwood, q. s.) Dose, from gr. vj. to gr. xij.——*Fuller's holy pills*, P. (Aloes, 8; senna and myrrh, āā. 4; assafœtida and galbanum, āā. 2; saffron and mace, 1; sulphate of iron, 12; oil of succin, q. s.; mugwort syrup, 48; for four-grains pills.) Dose, No. ij. twice a day.——*Bontius's hydragogue pills*, P. (Aloes, gamboge, and gum ammoniac, āā. e. q.) Dose, from gr. xij. to gr. xviij.——*Pilulæ aloes et assafœtidæ*, E. (Aloes, assafœtida, and medicinal soap, āā. e. p.) Dose, gr. x. twice a day.——*Aloetic pills*, PARIS H. (Socotorine aloes, ℈j.; tartar emetic, gr. iij.; extract of gentian, ʒss.; for twenty pills.) Dose, No. j. every night.——*Pilulæ aloes cum ferro*, GUY'S H. (Aloes, ʒjss.; gum myrrh, ʒij.; extract of gentian and sulphate of iron, āā. ʒj.; water, q. s. for four-grains pills.) Dose, No. ij. to No. iv. twice a day.——*Purgative pills*, Dr. PARIS. (Aloes and mercurial pills, āā. ℈j.; for six pills.) Dose, No. ij. every night.——*Compound aloes electuary*, or *Hiera picra*, P. (Socotorine aloes, 16; cinnamon, mace, asarabacca, saffron, and mastich, āā. 1; honey, 64.) Dose, from ℈j. to ʒj.——*Mesenteric electuary*, P. (Aloes, calomel, and arum, āā. 2; gum ammoniac and iron filings, āā. 4; senna, 6; powder of *tribus* and rhubarb, āā. 3.) Dose, from ʒss. to ʒij.

Extractum aloes, P., L., POL., PR., DEN. Dose, from gr. vj. to gr. xij. in pills.——*Extractum aloes compositus*, GUY'S H. (Aloes, ℔j.; ginger, ʒvj.; subcarbonate of soda, ʒij.; boiling water, ℔viij.) Dose, from gr. x. to gr. xx. in pills.

Tinctura aloes, P., A., B. (Aloes, 1; alcohol, 6.) Dose, from gut. x. to ʒss. in a proper menstruum.—U. S., L., D., E.——*Tinctura aloes aquosa*, B. (Aloes,

1; extract of liquorice, 3; water, 32; alcohol, 8.) Dose, from ʒss. to ʒj.——*Tinctura aloes ætherea*, E. (Aloes and myrrh, ʒjss.; saffron, ʒj.; spirit of sulphuric ether, ℏbj.)——*Tinctura aloes composita*, New York H., L., D. (Extract of aloes and saffron, āā. ʒiij.; tincture of myrrh, Oij.) Dose, from ʒj. to ʒij.——*Tinctura aloes et myrrhæ*, formerly *Elixir proprietatis*, U. S., E. (Myrrh, ʒij.; alcohol, Ojss.; water, Oss.; socotorine aloes, ʒjss.; saffron, ʒj.) Dose, from f.ʒj. to f.ʒij.——*Tinctura aloes composita, Baume de vie de Leliévre*, P. (Aloes, 9; gentain, saffron, rhubarb, cinnamon, white agaric, āā. 1; treacle, 2; sugar candy, 8; alcohol, 512.) Dose, from ʒj. to ʒiv.——*Vinum aloes*, D. (Aloes, ʒiv.; canella alba, ʒj.; Spanish wine, Oiij.; alcohol, ℏbj.)—L. (Aloes, ʒviij.; canella alba, ʒij.; proof spirit, distilled water, āā. Oiv.) U. S.——*Vinum aloes socotorinæ*, E. (Aloes, ʒj.; lesser cardamom and ginger, āā. ʒj.; Spanish wine, Oj.) Dose, as tonic, ʒj. to ʒij.; as purgative, ʒj. to ʒij.

Externally. Unguentum aloes cum petroleo, B. (Aloes, 2; beef's gall and petroleum, āā. 3; axungia, 24.)——*Unguentum terebinthinæ aloeticum*, Pol. (Tincture of aloes, 3; honey, 4; Venice turpentine, 6; the yolks of 2 eggs.)

Family Guttiferæ.

Gamboge. *Gummi resina gutta* seu *Cambogia.* A gum resin furnished by the *Stalagmitis cambogioides*, Murray, a tree, native of the East Indies, and growing especially in Ceylon and in the peninsula of Camboia.

B. C. Trunk of a middle height; leaves opposite, oval, shining, tough, of a deep green colour; male flowers, in distinct bunches; the hermaphrodite axillary; calix four-divided; corolla, four petals, about thirty stamina; fruit, a globular, whitish, or pink berry, containing several elongate and triangular seeds.

P. P. Gamboge is found in commerce in cylindrical masses, of various sizes, of a yellowish-brown externally, of a reddish-yellow colour internally, friable, with a shining fracture, of a slight taste at first, then acrid, inodorous, and of a specific gravity of 1.221.

C. P. It seems to be composed of 20 of gum and 80 of resin. It is very soluble in water, alcohol, and ether, which it colours yellow, and also in volatile oils, and in a strong solution of ammonia and potassa, to which it imparts an orange red colour. Heated, it melts, and burns at a higher temperature with a white flame, leaving a light and spongy coal.

Prep. It is obtained by making incisions in the bark of the tree, and breaking the leaves and young shoots. The milky juice concretes, and is formed in masses.

Th. E. This substance, being a very energetic drastic purgative, irritates powerfully the intestinal canal; indeed it very often induces colics and vomiting, and, administered in too large doses, it produces a lively inflammation of the stomach and intestines. It is, however, exhibited with advantage in cases in which a powerful derivation is indicated, in certain cases of dropsies, and chronic cutaneous affections. It is frequently used by English practitioners, whilst it is very seldom employed in France. It

may also be administered as an anthelmintic. The Italian physicians consider it as a powerful contra-stimulant.

D. & M. of Adm. *Powder*, gr. vj. in pills, or in an emulsive draught.——*Gamboge powder*, Dr. Paris. (Gamboge gr. iij. sugar, ℈j.) Taken every three hours, until it operates.——*Pilulæ gambogiæ et scammoniæ*, U. S. (Gamboge, ʒj.; scammony, ʒss., nitrate of potassa, ʒj.; castile soap, ʒij.) For four hundred pills.——*Pilulæ cambogiæ compositæ*, L., E. (Gamboge, ʒj.; extract of aloes, ʒjss.; ginger, ʒss.; comp. powder of cinnamon, ʒj.; medicinal soap, ʒij.) Dose, from gr. x. to ℈j.——*Bolus cambogiæ*, Guy's H. (Gamboge, gr. x.; tartrate of potassa, gr. xx.; ginger, gr. iij.; simple syrup, q. s.) For a bolus. Dose. No. j. a day.——*Dr. Paris' cathartic pills.* (Compound gamboge pill and compound extract of colocynth, āā. gr. xv.; calomel, gr. x.; ginger syrup, q. s.; for 12 pills.) Dose, No. ij. a day.

Family Colchiceæ.

Meadow-Saffron. *Radix colchici. Colchicum autumnale*, Lin. A plant native of Europe, very common in wet meadows, and flowering in September. P. U. The bulb and seeds.

B. C. Stem very short; leaves lanceolate, shining, terminated towards the base in a sheath, presenting a tuft of leaves appearing only during the winter; flowers large, purple; calix, with a very long tube, and a campanulated limb; stamina, inserted on the upper part of the tube; fruit, an ovoid, elongate and trifid capsule, bearing three deep furrows, and containing seeds covered with arils.

P. P. The bulb of colchicum, such as it is found in commerce, is ovoid, of the size of a walnut, compressed on one side, convex on the other, of a compact and white tissue, of a yellowish colour and marked externally with uniform furrows, of a strong and unpleasant smell, of an acrid and nauseous taste, much stronger than that of the fresh bulb, which is enveloped in a sort of brown tunic, and contains a very acrid milky juice; seeds small, almost round, wrinkled, of a brown colour, excessively tough; taste hardly perceptible at first, but very acrid afterwards.

C. P. This substance, according to Messrs. Pelletier and Caventou, contains some *veratria* combined with gallic acid, a peculiar fatty matter, gum, starch, inulin and woody fibres. Vinegar, wine and alcohol, are the best solvents of this article.

Th. E. The effects of colchicum vary considerably according to the dose in which it is given. In small doses, it seems from the observations of several English practitioners, to act rather as a sedative, than as an irritant; consequently, they often administer it successfully in this manner, to soothe the excruciating pains produced by gout or acute rheumatic affections. In large doses, on the contrary, this substance proves excessively irritating, and produces copious alvine evacuations, frequently attended with colics, vomiting, and all the other symptoms of gastro-intestinal inflammation. Exhibited in moderate doses, colchicum becomes an energetic purgative, and its action operates likewise upon the

urinary organs, the activity of which it increases considerably; indeed, it has for this reason been ranked by several authors among the diuretic substances next to the squill, to which it is very nearly related as to its modus operandi. It is employed as a drastic, in cases of hydrothorax, anasarca, violent gouty and rheumatic pains, &c. This very active substance, frequently exhibited in England, is very little used on the continent. However, Drs. Cloquet and Godard have lately called the attention of practitioners to this remedy, by the many advantages they have obtained from its administration in chronic rheumatic affections. These physicians have exhibited the tincture of this substance, and they have observed that the tincture prepared from the seeds of the plant, is much more active than that from the bulbs, in the proportion of three to five.

D. & M. of Adm. *Powder*, gr. 1 to 4 in pills.——*Tinctura colchici*, P. (Colchicum, 1; alcohol, 4.) Dose, from gut. xv. to xxv. in a mixture.)——*Darmstrong's tincture of colchicum*, P. (Colchicum, 1; alcohol, 2.) Dose, from gut x. to xx.——*Vinum colchici*, U. S. (Fresh meadow saffron, 1 part; wine 2 parts.)—L. (Bulb of colchicum, ℥ij.; proof spirit, f.℥xij.; distilled water, f.℥xx.)——*Dr. Thomson's formula for the preparation of the wine of colchicum.* (Bulbs of colchicum, sliced transversely, and dried without heat, ℥jss.; pulverize them and pour upon the powder, 12 ounces of good sherry wine, agitate the mixture twice a day for seven days and then filter for use.)—P. (Colchicum, 1; Malaga wine, 16.) Dose, from ℈j. to ʒss. and more progressively in a mixture.——*Vinum colchici*, Guy's H. (Fresh colchicum, ℥xxvj.; wine, ℔ijss.; alcohol, ℥ij.) Dose, from gut. xxx. to cxx., once or twice a day.——*Wine of colchicum seeds*, P. (Ripe colchicum seeds, 1; Spanish wine, 8.) Dose, from gut. xx. to xxx. and above, gradually.—L. (Colchicum seeds, 1; sherry wine, 16.)——*Acetum colchici*, L., B. (Fresh colchicum and alcohol, āā. ℥j.; acetic acid, Oj.) Dose, from gut. xxx. to xxxvj., in a mucilaginous menstruum.——*Oximel of colchicum*, D., B. (Vinegar of colchicum, 1; honey, 2.) Dose, from ʒij. to ℥j., gradually, twice a day in a sweetened drink.——*Dr. Paris' diuretic mixture*, (Oximel of colchicum, ʒij.; acetate of potassa, ʒj.; compound spirit of juniper, ℥ss.) To take twice a day.——*Honey of colchicum*, P. (Colchicum, 1; water, 24.; honey, 12.) Dose, from ℥ss. to ℥j. and more.——*Syrupus colchici*, E. (Vinegar of colchicum, 4; sugar, 9.) Dose, from ʒij. to ℥j.

White Hellebore Root. *Veratrum album*, Lin. A plant belonging to the same family as the preceding article, and a native of the mountains of Jura in Auvergne, and of the Alps. It is in the form of a truncated cone, two to three inches long, one inch thick, frequently furnished with numerous radicles. It is white inside, black and wrinkled outside; of a sweetish taste at first, then acrid and corrosive. It contains *veratria*, and acts as a violent drastic. It was formerly employed as a hydragogue in passive dropsies; it is now almost obsolete.

[American Hellebore. *Veratrum viride*, Willd. A native plant, very nearly related to the European white hellebore, possesses undoubtedly the same properties. It grows in almost every

section of the United States, and is found in the vicinity of Philadelphia, on the banks of the Schuylkill. It is a stately plant, from three to six feet high; its leaves are large, ovate, plaited, numerously nerved; the peduncles and branches of the panicle pubescent; upper part of the branchlets filiform, with male flowers, the lower part fructiferous; flowers of a greenish-yellow. The roots are pretty large and fibrous, and frequently used to poison rats, &c.]

Cevadilla. *Veratrum sabadilla*, Retz. The seeds of this plant, a native of Mexico, were formerly administered as an anthelmintic. They contain a considerable quantity of *veratria*, and their very dangerous and uncertain action has caused them to be abandoned for internal use. In a pulverized state, they are occasionally used to destroy vermin; but this application to the head may be attended with vertigo and other alarming symptoms.

Veratria. An alkaline vegetable substance discovered by Pelletier and Caventou in the seeds of the Cevadilla, and in most plants of the family *Colchiceæ*.

P. P. It is pulverulent, white, inodorous, but producing violent sneezing when it penetrates into the nasal passages, of a very acrid taste, promoting salivation.

C. P. According to Messrs. Pelletier and Dumas, it contains carbon, 66.75; oxygen, 19.60; hydrogen, 8.54; and nitrogen, 5.04. It is very little soluble in cold water, dissolves, however, in 1000 of this menstruum when boiling, and in alcohol, but is less soluble in ether. It possesses alkaline properties, and forms with the acids neutral salts, which do not crystallize, but acquire by evaporation the appearance of gum. Heated, it melts at 50° Centig. (122° Fahr.) and is decomposed at a high temperature.

Th. E. Dr. Magendie's experiments have shown that veratria acts upon the animal economy like the most violent irritant poisons, and produces vomiting, and very copious and frequently bloody evacuations, induced by the inflammation of the intestinal mucous membrane, and that these symptoms are often followed by tetanus and death. However, he thinks that this substance, administered in proper doses, may be a valuable substitute for colchicum, white hellebore, &c. which are indebted to this principle for the properties they possess; indeed, he has exhibited it with good effects as a drastic purgative, in cases in which it was necessary to procure promptly copious alvine evacuations. Nevertheless, it is a very dangerous substance, the employment of which requires the greatest caution.

D. & M. of Adm. *Veratria pills*, F. M. (Veratria, gr. ½; gum Arabic and simple syrup, q. s. for 6 pills.) Dose, from No. j. to iij. a day.——*Alcohol of vera-*

tria, F. M. (Veratria, gr. iv.; alcohol, ʒj.) Dose, from gut. x. to xxv. in a cupful of a mucilaginous drink, and externally in frictions, q. s.——*Solution of veratria*, F. M. (Sulphate of veratria, gr. j.; distilled water, ʒij.) Dose, from ʒj. to ʒiv.

Externally. *Veratria salve*, F. M. (Veratria, gr. iv.; hog's lard, ʒj.) In frictions.

Family Ranunculaceæ.

Black Hellebore. *Hellebori nigri radix. Melampodium helleborus niger*, Lin. A perennial plant growing in the mountains of Vosges, Dauphiné, and Provence, and flowering in the month of December. P. U. The root.

B. C. Stem subterraneous, horizontal, articulate; leaves apparently radical, petiolate, seven or eight-lobed, tough, dentate, and ob-oval; flowers one or two on a scape, from two to six inches high, of a pink colour, very large, nodding, with two bractes; calix regular, persistent, five-parted; corolla ten or twelve; petals hollow and cornet-like; fruit, from three to six capsules.

P. P. This root is of the length and size of the little finger, gray, or reddish internally, blackish externally, marked with circular rings, not distant from each other, and furnished with numerous radical fibres; its taste, which at first is acrid and bitter, seems to benumb the tongue; its odour is nauseous.

C. P. It contains, according to Messrs. Feneulle and Capron, a fatty oil slightly acrid, a resinous matter, an odorous volatile acid, a bitter principle, wax, &c. Water, and alcohol especially, take up it active principles, which are mostly lost by a long ebullition.

Th. E. The local action of black hellebore is very irritating. Its volatile principle seems to act in a special manner upon the nervous system. It is one of the most energetic drastic purgatives, and is yet administered occasionally in dropsies and certain diseases of the skin. Its employment may be followed by the most serious accidents. It was formerly highly recommended in cases of mental alienation. It is sometimes exhibited as emmenagogue and anthelmintic. The employment of this substance requires a good deal of caution.

D. & M. of Adm. Powder, gr. x. to ℈j. Infusion, ʒij. to ℔j. of boiling water; ʒj. of which is given every 4 hours.——*Extractum hellebori nigri*, E., D., Pol. gr. vj. to xij. in pills.——*Bacher's extract of hellebore*, P. (Black hellebore, 4; sub-carbonate of potassa, 1; alcohol and white wine, āā. 16.) Dose, from gr. iv. to x. in pills.——*Bacher's tonic pills*, P. (Bacher's extract of hellebore and extract of myrrh, āā. 8; carduus benedictus, 3; for one-grain pills.) Dose, from No. j. to ij.——*Tinctura hellebori nigri*, U. S., P., L., E., D. (Black hellebore, 1; alcohol, 8; cochineal, q. s. to give a fine colour.) Dose, from gut. xx. to ʒss. and even ʒj. in a proper menstruum.

The Green Hellebore, *Helleborus viridis*, Lin. and the Stinking Hellebore, *H. fœtidus*, Lin. possess the same properties, and were formerly used to fulfil the same indications.

Family Euphorbiaceæ.

Croton Oil. *Oleum tiglii.* A fatty oil obtained from the seeds of the *Croton tiglium*, Lin. a shrub growing in the Molucca Islands. These seeds are known in commerce by the name of *Tilly seeds* or *Grana tiglia.*

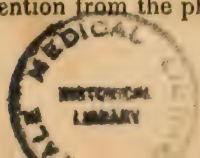
B. C. Trunk moderately high and branchy; leaves oval, acuminate, smooth, dentate, with two glands at the base; flowers straight, simple at the extremity of the branches, of a pale colour; the inferior flowers female, the superior male; fruit a three-celled capsule, each cell containing one seed.

P. P. The grana tiglia are oval, oblong, almost quadrangular, five or six lines long, and furnished with a yellowish epidermis. When this coat is taken off, their surface is black and smooth, and presents several projecting nerves, extending from the umbilicus to the top of the seed; the two lateral ones are the most apparent. They furnish a yellow orange oil, of a sharp and warm taste, and of a very unpleasant smell, *sui generis.*

C. P. According to Dr. Nimmo, this oil contains sweet fixed oil, 55; an acrid purgative principle called *tiglin*, 45; which, according to Dr. Paris, is very nearly related to *elatin.* This substance, of a resinous nature, and reddening slightly the tincture of litmus, is insoluble in water; but dissolves easily in alcohol, ether, and in the fixed or volatile oils.

Prep. We are ignorant of the mode by which it is prepared in India; but it seems very probable that it is obtained by expression or ebullition.

Th. E. Administered in small doses, this oil seems to be absorbed very readily, and acts upon the intestines by means of its influence upon the nervous system. It produces, in this manner, more or less copious alvine evacuations. This effect is likewise produced, whether it be introduced into the stomach, injected into the veins, or applied to an absorbent surface. The general action of this substance seems also to render active the secretion of urine, and induce diaphoresis. In large doses, it acts in a direct and immediate manner on the intestinal mucous membrane, and produces a violent inflammation, attended with the most serious symptoms. This article is exhibited with advantage in cases of obstinate constipation, when the other drastics have been administered without effect; and when it is necessary to obtain very prompt results, or when there is any impediment to the administration of a common purgative, as in cases of tetanus, mania, &c. Dr. Ainslie has exhibited this oil with great advantage in frictions, in cases of chronic rheumatism, and tumours of the articulations. The very violent action of this medicine requires the greatest attention from the physician.



D. & M. or Adm. Gut. j. to iv., at most, in ℥ss. of syrup, or in pills with crumb of bread or soap.——*Dr. Smith's cathartic mixture.* (Croton oil, gut. ij.; mucilage of gum Arabic, ℥j.; sugar, q. s.) To be taken in 2 doses.——*Croton oil soap,* F. M. (Croton oil, 2; solution of caustic soda, 1.) Dose, from gr. ij. to iv., with sugar, or in pills.

Under the name of Purging or Barbadoes Nuts, *Pinhones indici, &c.* the seeds of the *Jatropha curcas,* Lin., a shrub of the same family, have been until now mistaken for those of the *Croton tiglium;* but they differ essentially from this latter. In fact, they are of a dull blackish-brown colour, and smooth at their surface. They are externally convex, rounded, with a slightly prominent angle in the middle; the angle on the internal side is more marked. The almond is covered with a whitish pellicle; its tunic is composed of two coats; the one spongy and whitish, the other hard, compact, and brownish. These seeds are endowed also with irritant properties, which render them drastic and emetic.

The same may be said of the *Jatropha gossypifolia,* Lin., and *J. multifida,* Lin., which are now no longer employed. However, Mr. Caventou has obtained from the purging nut, by means of alcohol, an oil altogether similar to the croton oil, possessing absolutely, and in the same degree, the same therapeutic properties.

Catapucia Oil, *Oleum catapuciæ minoris* seu *Euphorbia lathyris,* a fatty oil, extracted from the seeds of the *Euphorbia lathyris,* Lin. A biennial plant, indigenous to France, growing in cultivated places. [This plant is now frequently found in America near gardens, and in cultivated ground, and is generally known by the name of *mole plant,* it being supposed that no moles disturb the ground where this plant grows.]

B. C. Root perpendicular, white; stem straight, simple, from two to three feet high; leaves sessile, opposite, of a light green, and lanceolate; flowers monoicous, forming a large umbel composed of four rays; male flowers with from fifteen to twenty stamina, around the female flowers; fruit, three-sided, with three cells, containing each a large yellowish seed.

P. P. The oil extracted from the seeds is white, transparent, inodorous, and almost tasteless.

C. P. It has not as yet been investigated with care. It is probable, however, that it contains, as the croton oil, an acrid principle, and a certain proportion of sweet fixed oil.

Prep. It is prepared by expression, or by treating the seeds, reduced to a paste, with alcohol, or rather with ether.

Th. E. The country people in France have been for a long time in the habit of using the fresh leaves and roots of this plant, which is full of a milky, acrid, and almost caustic juice, in order

to obtain copious alvine evacuations; but this administration being rather dangerous, on account of the energy and uncertainty of this substance, it ought not to be used except in cases of absolute necessity, and unless no other purgative medicine can be procured. Drs. Frank and Calderini have of late discovered that the oil obtained from the seeds of this plant possesses a purgative property, and have administered it as a purgative with great success in numerous cases. The observations of Dr. Bally, and of other practitioners, leave no doubt as to its efficacy. And the learned physician we have just mentioned, thinks that it may be advantageously substituted for the croton oil itself, since its action is much less violent, and its taste being scarcely perceptible, its administration is very easy, especially with children. Another advantage of this medicine is, that its price is so moderate that there is no inducement to the sophistication of this drug.*

D. & M. of Adm. Gut. vj. to x. at most, in an emulsion or in pills.——*Purgative mixture with catapucia oil.* (Catapucia oil, gut. viij.; gum Arabic, ʒj.; sugar, ʒij.; distilled water, ʒiij.) Dose, from cochl. j. to ij. every hour until it operates.

Family Rhamneæ.

Buck Thorn. *Fructus rhamni cathartici. Rhamnus catharticus*, Lin. *Spina cervina.* A shrub, native of Europe, very common in woods and hedges. P. U. The fruit.

B. C. Stem from eight to ten feet high, ramose; leaves opposite, oval, acute, cordiform, of a light green colour; flowers dioicous, small, greenish; calix tubular, four-divided; corolla with four very small and linear petals; male flowers four stamina and a rudimentary pistil; female flowers, ovary globular, four monospermous cells, four stigmas; fruit globular, containing three small kernels.

P. P. The buck thorn berries are pisiform, black when they are perfectly ripe, shining, with a bright point in the centre, containing a greenish pulp, of a bitter and unpleasant taste, and nauseous smell.

C. P. The expressed juice of buck thorn contains, according to Mr. Vogel, a peculiar colouring principle, some free acetic acid, mucilage, and a matter containing nitrogen and sugar. *Sap-green*, a colour extensively used by painters, is prepared by combining the juice of buck thorn with lime.

Th. E. The pulp of the buck thorn berries is a very energetic

* [The attention of professional men is particularly called upon an article which seems so valuable: the plant which furnishes the *Catapucia oil*, although not a native, is very commonly found in the vicinity of our large cities; its cultivation would give no trouble, and would no doubt be very advantageous. We shall also suggest the propriety of trying the oil of the seeds of some of our native species, such as *Euphorbia maculata, ipecacuanha, peplus, corollata, pilosa,* &c.]—Am. Eds.

purgative, the operation of which is frequently accompanied with violent colics, dryness of the mouth, thirst, and other symptoms of a lively irritation of the gastro-intestinal mucous membrane. This remedy suits only persons of a robust temperament, difficult to be operated upon. Sydenham recommended it highly in the treatment of dropsy. Finally, it is yet employed occasionally as a vermifuge.

D. & M. of Adm. Entire fresh berries, No. x. to xx.——*Expressed and fermented juice*, P. ʒij. to ʒiv.——Decoction, No. xx. to xxx. to ℔j. of water.——*Extract or rob of buck thorn*, P.——*Rob spinæ cervinæ*, A. ℈j. to ʒjss.——*Syrup*, P. (Buck thorn berry juice and sugar, āā. equal parts.)——*Syrupus rhamni*, L. (Buck thorn berry juice, 128; ginger and Cayenne pepper, āā. 1; sugar, 84.) Dose, from ʒij. to ʒj. and above, in an aqueous menstruum.——*Purgative mixture*, Paris H. (Buck thorn syrup, ʒss.; tincture of jalap, ʒj.; decoction of succory, ʒiv.)

The fruit of the European Black Alder, *Rhamnus frangula*, Lin. possesses the same properties.

Family Polygoneæ.

Rhubarb. *Rhabarbarum* seu *Rhei radix. Rheum palmatum*, Lin. A perennial plant, native of China and Tartary, and cultivated in different parts of Europe, especially in France, in the department of Morbihan. P. U. The root.

B. C. Stem simple, straight, cylindrical, from two to four feet high, ramose at top; leaves very large, petiolate, the limb divided in seven acute lobes, irregularly cut on the sides; flowers small, yellowish, very numerous, in an elongate panicle at the top of the stem; calix five or six-divided; nine stamina; five simple stigmas, almost sessile; fruit, a capsule with three prominent angles.

P. P. We find in commerce three principal species of rhubarb, viz.—

The *Russian rhubarb*, the most valued of the three, is in pieces somewhat flattened, irregular, sometimes angular, smooth, with a hole in the middle, of a yellow colour externally, irregularly marked internally, with red and white veins, of a compact fracture, of a strong peculiar odour, of a bitter and astringent taste, gritty under the teeth, dying the saliva of a saffron-yellow colour; its powder is of a pure yellow.

The *Chinese rhubarb* is in round pieces, larger than those of the preceding, not so smooth, nor so well prepared; generally with small holes, of a dirty yellow colour, and covered over with a yellowish powder. Their texture is compact, of a dull red colour, and marked internally with white veins; of a dull and rough fracture, gritty under the teeth, having a taste and a smell similar to the preceding.

The *Rhubarb* cultivated in France, and of late in England, is less esteemed than the others, and is not furnished by the *Rheum*

palmatum alone, but also by the *R. undulatum* and *compactum*. It is cultivated on a large scale at Rheumpole, in the department of Morbihan. This species is in pieces resembling very much the exotic rhubarbs in appearance and shape, but they are easily distinguished from them by their exterior, which is slightly red, and possessing a sweeter smell, being very slightly bitter, mucilaginous, and sweet, and principally for their not being gritty under the teeth.

C. P. The *Russian* and *Chinese* rhubarbs are very similar in their composition; they contain a peculiar principle, to which they are indebted for their smell, taste, and colour, which has been called *Rhabarbarin;* a small quantity of fixed sweet oil, some super-malate of lime, gum, starch, oxalate of lime in the proportion of one-third of its weight, some lignin, and salts of lime and potassa. The French rhubarb differs from the others, inasmuch as it contains only one-tenth of oxalate of lime, a larger proportion of starch, and a more considerable quantity of colouring principle, of a reddish hue. Alcohol dissolves 2.7 in 10 parts of rhubarb, ether 1.5, and boiling water, almost one-half. It is necessary to remark that this root looses part of its purgative properties by ebullition in water, and becomes more bitter and astringent.

Rhabarbarin is yellow, soluble in warm water, alcohol, and ether, insoluble in cold water, of a bitter and harsh taste. It volatilizes on exposure to heat, and gives a yellow vapour. It acquires a red colour with the alkalies, and forms with the acids insoluble yellow compounds.

Incomp. Subst. The strong acids, lime water, the sulphates of iron and zinc, nitrate of silver, tartar emetic, corrosive sublimate, the infusions of catechu, of bark, and cascarilla.

Th. E. Rhubarb is at once purgative and tonic; in small doses it acts only as an astringent, but in large doses it produces at first the phenomena of purgation, and afterwards acts as a tonic. It is exhibited with great success in cases of debility of the stomach, anorexia, diarrhœa, and generally in all cases when a gentle and rather tonic purgative is indicated. This remedy is very much used in a great many affections, which it would be impossible fully to describe here; it is an excellent medicine for children. The rhubarb indigenous to France is less active than the China or Russia rhubarb, and it is required to give three times as much, in order to produce a similar effect. [The same may be said of the English rhubarb which has come to our market, for these few years past.]

D. & M. of Adm. Powder, as a tonic, gr. vj. to gr. xij.; as a purgative, ℈j. to ʒss. and even more.——*Pulvis rhei compositus*, New York H. (Rhubarb and

calomel, āā. equal parts.) Dose, from gr. x. to gr. xx.——*Powder of rhubarb and ipecacuanha*, Paris H. (Rhubarb, gr. xij.; ipecacuanha, ℈j.) In several doses. ——*Pulvis rhei compositus*, Guy's H. (Rhubarb and sub-carbonate of soda, ʒj.; columbo, ʒij.) Dose, from gr. x. to gr. xx. two or three times a day.——*Pulvis rhei cum magnesia*, Guy's H. (Rhubarb, ʒj.; magnesia, ʒij.) Dose, from gr. x. to ʒj.——*Pulvis rhei salinus*, Guy's H. (Rhubarb, ʒj.; sulphate of potassa, ʒij.) Same doses.——*Pulvis rhei cum hydrargyro*, Guy's H. (Rhubarb, ʒiv.; calomel and ginger, āā. ʒj.) Dose, from gr. x. to ℈j.——*Mistura rhei composita*, Guy's H. (Rhubarb, ʒj.; sub-carbonate of soda, ʒij.; tincture of orange peel, ʒjss ; decoction of liquorice, ʒxss.) Dose, from ʒss. to ʒj. two or three times a day.——Infusion, ʒij. to ʒiv. to Hbij. of boiling water.——*Infusum rhei*, New York H. (Rhubarb, ʒj.; boiling water, Oss.)—E. (Rhubarb, 1; alcohol of cinnamon, 2; boiling water, 16.) Dose, from ʒj. to ʒiv.——*Infusum rhei aquosum*, R., F. (Rhubarb, 32; tartrate of potassa, 3; boiling water, 288.) Dose, from ʒj. to ʒiv. and more.——*Infusum rhei cum alkali*, A. (Rhubarb, 3; carbonate of potassa, 1; boiling water, 48.)——*Tinctura rhabarbari aquosa*, Den. (Rhubarb, 4; carbonate of soda, 1; boiling water, 40.)——*Infusum rhei boraxatum*, Pol., Pr. (Rhubarb, 6; sub-borate of soda, 1; vinous cinnamon water, 8; boiling water, 48.) Same doses.——*Pilulæ rhei cum soda*, Guy's H. (Rhubarb and sub-carbonate of soda, āā. ʒjss.; treacle, q. s. for 60 pills.) Dose, from No. ij. to No. iv.——*Pilulæ rhei aromaticæ*, Guy's H. (Rhubarb, ʒij.; capsicum, ʒj.; extract of aloes and squill, āā. gr. xxx.; treacle, q. s. for 60 pills.) Dose, from No. ij. to No. iv. once or twice a day.——*Pilulæ rhei compositæ*, U. S., E. (Rhubarb, ʒj.; socotorine aloes, ʒvj.; myrrh, ʒiv.; essential oil of peppermint, f.ʒss.) Dose, from gr. x. to ℈j.; twice a day.——*Rhubarb lozenges*, P. (Rhubarb, 1; sugar, 8; mucilage of gum tragacanth with cinnamon water, q. s. for twelve-grains lozenges, each of which contains one grain of rhubarb.) Dose, from No. iv. to xij. a day, as stomachic.——*Extractum rhei*, P., Pol., F., Pr., L. Dose from ℈j. to ʒj.——*Extractum rhei compositum*, Pol., Pr. (Extract of rhubarb, 3; aloes, 1; alcohol, q. s.)—Den. (Extract of rhubarb, 16; aloes, 5; jalap soap, 8; alcohol, q. s.) Dose, from gr. x. to ℈j.——*Tinctura rhei*, U. S. (Rhubarb, ʒiij.; cardamom, ʒss.; diluted alcohol, Oijss.)—L. (Rhubarb, ʒij.; cardamom, ʒjss.; saffron, ʒij.; proof spirit, Oij.)—D. (Rhubarb, ʒij.; lesser cardamom, liquorice, āā. ʒss.; saffron, ʒij.; proof spirit, Oij.)—E. (Rhubarb, ʒiij.; cardamom, ʒss.; proof spirit, Hbijss.)—A., B., (Rhubarb, 1; alcohol, 6.)—Guy's H. (Rhubarb, ʒj.; capsicum and ginger, āā. ʒj.; alcohol, Hbj.)——*Tinctura rhei composita*, L. (Rhubarb, ʒij.; liquorice, ʒss.; ginger and saffron, āā. ʒij.; alcohol, Oj.; water, f.ʒxij.)——*Tinctura rhei et aloes*, U. S., E. (Rhubarb, ʒx.; aloes, ʒvj.; small cardamom, ʒiv.; alcohol, Oijss.)——*Tinctura rhei et gentianæ*, U. S., E. (Rhubarb, ʒij.; gentian root, ʒss.; alcohol, Oijss.) As a purgative, all these tinctures are given in the dose of from ʒiv. to ʒvj.; and as a stomachic, from ʒj. to ʒij.——*Vinum rhei*, U. S., E. (Rhubarb ʒij.; alcohol, f.ʒij.; canella, ʒj.; Spanish wine, Oj.)—F. (Rhubarb, 8; cardamom, 1; Spanish wine, 48.)——*Tinctura rhei vinosa*, Pr., Pol. (Rhubarb, 8; orange peels and extract of elecampane, āā. 2; cardamom, 1; sugar, 12; Malaga wine, 96.)—Den. (Rhubarb, 8; gentian, 3; cardamom, 2; white wine, 96.) Dose, from ʒss. to ʒj. ——*Syrupus rhei*, U. S. (Rhubarb, ʒij.; boiling water, Oj.; sugar, q. s.)—— *Syrupus rhei aromaticus*, U. S. (Rhubarb, ʒv.; cloves, cinnamon, āā. ʒss; nutmeg, No. ij.; water, Oj.; digest and evaporate till the liquor is reduced to half a pint; strain, and add one pound of sugar, and half a pint of diluted alcohol, then boil to the consistence of a syrup.)——*Syrupus rhei cum senna*, U. S. (Rhubarb, senna, āā. ʒjss.; cardamom, ʒiij.; boiling water, Oj.; sugar, Hbj.)——*Syrupus rhei compositus*, P. (Rhubarb, 20; coriander and fennel seeds, āā. 1; water, 200; sugar, 400.)——*Syrupus rhei*, F. (Infusion of rhubarb, 1; sugar, 2.)—Pol., R., Pr., Den. (Rhubarb, 12; cinnamon, 3; carbonate of soda, 1; boiling water, 96; sugar, 144.)——*Compound syrup of succory*, P. (Rhubarb 6; fumitory and scolopendrium, āā. 3; wild succory root, 9; alkekengi, 2; cinnamon and yellow sanders, āā. 1; water, 192; sugar, 80.) Dose, from ʒj to ʒij.

Rapontic Root, *Rheum raponticum*, Lin. A plant very nearly related to the preceding, and which may be employed in the same cases and in the same manner. However, as it possesses tonic properties to a certain degree, it is necessary to administer it in larger doses, in order that it may prove a purgative.

Family Leguminosæ.

Senna. *Sennæ folia et folliculi.* This remedy is furnished by several shrubs of the genus *Cassia*, which Linnæus has united under the name of *Cassia senna*, and which have been since distinguished by those of *Cassia acutifolia*, Delile; *C. obovata*, Colladon; and *C. lanceolata*, Nectoux. These plants grow abundantly in Egypt and Nubia, and the second is cultivated in Italy and Spain. P. U. The leaves and fruit, or follicles.

B. C. Stem from two to three feet high, straight, ramose; leaves alternate, pinnate, composed of from four to eight pairs of leaflets of different forms in the different species which we are now investigating; flowers yellow, in pedunculate and axillary spikes; calix, coloured, five caducous divisions; corolla, irregular, five declined and free petals; fruit, a flattened pod, elliptical, bivalve, with several cordiform seeds, contained in separate cells.

P. P. Most of the senna found in commerce under the name of Alexandria senna, (Séné de la Palte,) is a mixture of the leaflets of the three different species we have just mentioned. Those furnished by the *Cassia acutifolia* are the most valued; they are oval, acute, lanceolate, entire, from eight to fifteen lines long, presenting on the back a very prominent longitudinal nerve, of a yellowish-green colour on the upper face, pale-green, and slightly glaucous underneath. Those belonging to the *C. obovata*, are oboval, larger at the top than at the base, very obtuse, one inch long, otherwise similar to the preceding. Finally, the leaves of the *C. lanceolata* are narrower, longer, smooth, and their petioles are glandular. These different species possess rather a pleasant smell; their taste is bitter and viscous. As to the pods or follicles, three different sorts are introduced in commerce, viz: the Alexandria follicles, which are large, of a deep and blackish-green, smooth and flattened; the Tripoli follicles, which are smaller, of a light green, approaching to fallow; and the Aleppo follicles, which are nearly black, narrow, twisted, and almost semi-circular. Their smell and taste are nearly similar to those of the leaflets.

C. P. Senna, according to Messrs. Lassaigne and Feneulle, contains a peculiar substance, called *Cathartin*, some chlorophyllin, a fatty oil, a small quantity of volatile oil, a yellow colouring principle, albumen, and salts of lime and potassa. Water and alcohol dissolve its active properties.

Cathartin seems to be the active principle of senna; it is

neither acid nor alkaline, and does not crystallize; it is slightly deliquescent, of a reddish-yellow colour, of a peculiar odour, and of a bitter and nauseous taste. It dissolves in water and alcohol, but not in ether. Heated, it is decomposed rapidly. It has not as yet been introduced into practice.

Incomp. Subst. The strong acids, the alkaline carbonates, lime-water, tartar emetic, infusion of yellow bark.

Th. E. Given in large doses, senna and its follicles act upon the economy by irritating powerfully the gastro-intestinal mucous membrane, as is proved by the violent colics, nausea, and other symptoms which they produce. In moderate doses, senna proves a very powerful cathartic, and one of a very frequent administration. It seldom happens, however, that it is given alone. It is commonly associated with other but rather milder purgatives, such as neutral salts, tamarinds, manna, &c.; and in the United States as well as in England, it is generally mixed with an aromatic substance, such as ginger, caraway, cardamom, cinnamon, &c., in order to prevent the griping it frequently produces. A small quantity of neutral salts prevents this unpleasant effect more effectually. We have had occasion to ascertain at different times that this practice is very advantageous.

D. & M. of Adm. Powder, almost obsolete; ℈j. to ʒj. Infusion, ʒij. to ʒiv. to ℥viij. of boiling water.——*Infusum sennæ*, F. (Senna, 1; boiling water, 128.)—D. (Senna leaves, ʒiij.; lesser cardamom, ʒss.; boiling water, f.℥vj.)—E. (Senna, ℥vj.; ginger root, ℈j.; boiling water, ʒix.)——*Infusum sennæ compositum*, U. S. (Senna, ℥jss.; super-tartrate of potassa, ʒij.; ginger, ʒj.; boiling water, Oj.)—L. (Senna, ℥jss.; ginger, ʒj.; boiling water, Oj.)——*Infusum sennæ et tamarindi*, U. S., D.——*Infusum sennæ compositum*, E. (Senna, ʒj.; tamarind, ℥j.; coriander, ʒss.; sugar, ℥ss.; boiling water, Oss.)—Den., Pr. (Senna, 12; currants, 6; coriander, 2; tartrate of potassa, 5; manna, 40; boiling water, 192.)——*Purgative draught*, Paris H. (Senna, 2; boiling water, 16; tartrate of potassa and soda, 1; manna, 3.) Dose, from ʒij. to ʒiv.)——*Common purgative draught*, P. (Senna and sulphate of soda, āā. 4; rhubarb, 1; manna, 24; water, 80.) Dose, from ʒij. to ʒiv.——*Mistura sennæ composita*, Guy's H. (Senna and common mint, āā. ʒj.; boiling water, ℔ij.; sulphate of magnesia, ℥vj.) Dose, from ʒij. to ʒiv.——*Purgative anti-arthritic powder*, P. (Senna, super-tartrate of potassa, gum arabic and cinnamon, āā. 2; scammony, sarsaparilla, china root and guaiac, āā. 1.) Dose, from gr. xij. to ℈j. and more.——*Pulvis sennæ compositus*, L. (Senna and super-tartrate of potassa, āā. ʒij., scammony, ʒss.; ginger, ʒij.)—F. (Senna, 2; scammony, 1; tartrate of potassa, 4.)——*Pulvis pectoralis* seu *liquoritiæ compositus*, Pr., Pol. (Senna and liquorice, āā. 2; fennel seed and flowers of sulphur, āā. 1; sugar, 6.) Dose, from ℈j. to ʒj.——*Confectio sennæ, Lenitive electuary*, U. S. (Senna, ℥viij.; coriander, ʒiij.; liquorice, ℥iv.; figs, ℔j.; prunes, (pulp,) ℔j.; tamarind, ℔ss.; sugar, ℔ijss.; water, Oiv., boiled down to one-half.)—L. (Senna leaves, ℥viij.; figs, ℔j.; tamarind pulp, cassia pulp, pulp of prunes, āā. ℔ss.; coriander seeds, ʒiv.; liquorice root, ʒiij.; sugar, ℔ijss.; water, q. s.)——*Electuarium sennæ compositum*, E. (Senna, ℥viij.; coriander seeds, ʒiv.; liquorice, ʒiij.; figs, pulp of prunes, āā. ℔j.; pulp of tamarind, ℔ss.; sugar, ℔ijss.; water, ℔iv.)—D. (Senna, ʒiv.; pulp of prunes, ℔j.; pulp of tamarinds, ʒij.; molasses, Ojss.; essential oil of caraway, ʒij.) Dose, from ʒj. to ʒiv.——*Electuarium lenitivum*, P. (Senna, 56; tamarinds, 88; extract of cassia fistula, 72; prunes, jujubes, and

scolopendrium, āā. 12; barley, currants, and polypodium, āā. 16; mercurialis, 32; fennel and aniseed, āā. 1; sugar, 320; water, q. s.)——*Electuarium sennæ*, F. (Senna, 8; pulp of tamarinds, 24; coriander, 1; simple syrup, 16.) Pol., Pr. (Senna, 9; aniseed, 1; pulp of tamarinds and prunes, āā. 10; dry figs, 16; sugar, 32; water, q. s.) Dose, from ʒss. to ʒj.——*Electuarium sennæ compositum*, Guy's H. (Senna and tartrate of potassa, āā. ʒiv.; jalap, ʒij.; ginger syrup, ʒjss.) Dose, from ʒj. to ʒij.——*Confectio sennæ composita*, Guy's H. (Confectio sennæ, ʒij.; flowers of sulphur and sulphate of potassa, āā. ʒiv.; simple syrup, q. s.) Dose, from ʒj. to ʒij.——*Aqueous and alcoholic extract*, P. Dose, from gr. xij. to ℈j.; seldom used.——*Tinctura sennæ*, L. (Senna, ʒiij.; caraway seed, ʒiij.; cardamom, ʒj.; dry raisins, ʒiv.; alcohol, Oij.)—D. (Senna leaves, ℔j.; caraway seeds, ʒjss.; cardamom, ʒss.; proof spirit, Cj.)——*Tinctura sennæ composita*, formerly *Elixir salutis*, U. S. (Senna, ʒiij.; jalap, ʒj.; coriander and caraway seeds, āā. ʒss.; cardamom, ʒij.; diluted alcohol, Oiijss.) —E. (Senna, ʒij.; jalap root, ʒj.; coriander seeds, ʒss.; proof spirit, ℔iijss.) Dose, from f.ʒij. to f.ʒj.——*Tinctura sennæ aromatica, Warner's gout cordial*, (Senna, ʒij.; coriander and fennel seeds, āā. ʒj.; red sanders, ʒij.; saffron, liquorice, āā. ʒss.; stoned raisins, ℔ss.; diluted alcohol, Oiij.)——*Syrupus sennæ*, L. (Senna, ʒij.; fennel seeds, ʒj.; manna, ʒiij.; sugar, ℔j.; boiling water, Oj.)—E. (Senna, ʒij.; boiling water, ℔jss.; burnt syrup, ʒviij.)—D. (Manna and sugar, āā. ℔j.; senna leaves, ʒss.; boiling water, Oj.)—B. (Senna, 2; sugar, 9; boiling water, 12.)—P. (Senna, 125; fennel seed, 16; cloves, 2; juice of rennet apple, 1000; juice of borrage and ox-tongue, 750; water and sugar, āā. 1000.) Dose, from ʒss. to ʒj. and above.——*Enema of senna*, Paris H. (Senna, ʒiv.; decoction of flaxseed, ℔j.)——*Laxative enema*, Paris H. (Senna, ʒss.; emollient ingredients, ʒij.; sulphate of soda, ʒij.; water, q. s.)

[American Senna. *Cassia marylandica*, Lin., *C. riparia*, Rafinesque. A native perennial plant, growing in almost every part of the United States, in low places, and principally along streams. P. U. The leaves.

B. C. Stems many, nearly smooth, upright, from three to six feet high, cylindrical and simple; leaves alternate, petioles compressed, channelled above, with an ovate and stipitate gland at the base, bearing from eight to ten pairs of folioles, with short uni-glandular petioles; flowers of a bright yellow colour, paniculate, although partly axillary, and in short racemes, having each from five to fifteen flowers; calix coloured, with six oval, obtuse, and unequal segments; petals five spatulate, the two lower ones larger; stamina with yellow filaments; germ deflexed with the lower stamina, and hairy; fruit pendulous, linear, and flat pods, somewhat hairy and blackish, from two to three inches long, and containing from twelve to twenty seeds.

P. P. Taste mucilaginous and nauseous.

C. P. The predominant principles of the American senna are resin, mucilage, a colouring matter, a volatile substance, and probably some cathartin.

Th. E. This substance seems to be a very valuable cathartic, although inferior in strength to the Alexandria senna. It requires about one-third more to produce an ordinary cathartic effect. Dr. Hewson, of Philadelphia, and several other physicians, have exhibited it with the same success as common senna. It is much used by country practitioners as a substitute for the officinal article. This native senna deserves the particular attention of the profession. Carefully cleansed of its footstalks, it would probably an-

swer a better purpose than the common imported sort, which is too often adulterated with other inferior species of cassia, and even with the *Cynanchum arguel.*]

Family Juglandeæ.

[White Walnut. Butter-nut. *Juglans cinerea*, Willd. *J. cathartica*, Mich. A large tree, very common in the United States. P. U. The inner part of the root.

B. C. Trunk elevated; leaves lanceolate, serrate, rounded at the base, soft and pubescent beneath; petiole villose; fruit, oblong-ovate; nut oblong, acuminate, scabrous, and remarkable by its deeply carved shell.

Th. E. The extract made with the inner bark of this tree became, during the revolutionary war, a substitute for the common purgatives of the shops, and proved an efficacious and mild laxative, in doses of from ten to thirty grains, occasioning neither heat nor irritation. It is highly recommended in cases of dysentery. It is thought to be particularly applicable as an aperient in habitual constipation, as it is less apt, than most other cathartics, to leave the bowels in a state of languor or costiveness. Dr. M'Pheters, of Missouri, who has exhibited it with success in several diseases, unites it with Castile soap, for the purpose of correcting an acrimony which has sometimes been found in it. The efficacy of this extract is greatly increased by combining it with jalap, rhubarb, ipecacuanha, or calomel. It is generally administered in pills; its operation is slow, but certain and efficient, without producing sickness, griping, or distressing effects of any kind. This medicine is extensively used in the southern and western states by experienced practitioners, and in domestic practice.]

The leaves of the *Cynanchum arguel*, Delile, a shrub of the family *Apocyneæ*, which grows in the same regions as the true senna, are very often mixed with those of the latter. They may be distinguished by their being thicker than the senna leaves, having scarcely any nerves, with a shagreen-like and pale surface, and of a more bitter taste. This fraudulent mixture is made in the country itself where the senna is obtained.

The leaves of the *Buxus sempervirens*, Lin., and *Colutea arborescens*, Lin., &c. are likewise used for adulterating senna; but this fraud offers but slight inconveniences, inasmuch as these plants possess also a purgative property, but rather less certain than that of senna.

Hedge Hyssop. *Gratiola officinalis*, Lin. A plant of the family *Scrophulariæ*, growing in low grounds, acts in a very

energetic manner on the intestinal canal. It is used only by the country people as a drastic purgative. It is not used in common practice; it has been, however, recommended as an anthelmintic.

The *Globularia alypum*, and the *G. vulgare*, are plants, growing in the south of France, and belonging to the family *Globulariæ*. They possess considerable purgative properties. Dr. Loiseleur Deslongchamps has exhibited them successfully as a gentle purgative, and considers them, the former principally, as the best substitute for senna. The leaves are used in decoction, in the dose of from ʒij. to ʒvj. They are almost obsolete.

White Agaric, *Boletus laricis*, Lin., a plant of the family *Fungi*, growing on the *Pinus larix*, is white, porous, of a sweetish, and afterwards bitter taste, and inodorous. It contains a peculiar resinoid matter in a very considerable quantity, and a fungous substance. It is one of the most powerful drastic purgatives, formerly employed as a hydragogue in passive dropsies. It is now almost discarded, on account of the uncertainty of its operation. It is given in powder, in doses of from gr. iv. to gr. xij. in pills, or in the form of *extract*, P. in the dose of from gr. ½ to gr. iv.

The root of several species of the genus *Iris*, such as *Iris pseudo-acorus*, Lin., *I. germanica*, Lin., and *I. florentina*, contain when they are fresh, an acrid and irritating juice, which acts as a drastic and an emetic. They were once in considerable use, but they are now discarded. The orris root alone is yet employed in the composition of several officinal preparations, and is used for issue peas. Perfumers employ it to scent articles of perfumery with the odour of violets, which it possesses to a considerable degree.

[The American Blue Flag, *Iris versicolor*, Lin., a native plant, very common on the banks of ditches, &c. is also an active cathartic in doses of a few grains when dry. Dr. Bigelow asserts, however, that it is apt to occasion a distressing nausea resembling sea sickness, with a prostration of strength of some hours continuance. Its activity is diminished by age. This root possesses likewise some diuretic properties, and administered in moderate doses, in the form of decoction, or tincture, it has proved efficacious in anasarca, and other dropsical affections.]

The *Eupatorium cannabinum*, Lin., of the family *Synantheræ corymbiferæ*, is also endowed with some purgative properties, and is now abandoned. (See its analysis by Mr. Righini, in the note, page 139.)

CHAPTER XI.

LAXATIVE REMEDIES.

The word *Laxative, (laxare,* to relax,) has long been applied indiscriminately to all gentle purgative remedies; but, according to Dr. Barbier's classification, we shall apply it only to substances capable of promoting alvine evacuations, by the relaxing action they exercise upon the internal surface of the intestines; whilst the purgatives, properly so called, produce this effect by their irritating action only.

The administration of a laxative remedy is not followed by that sensation of internal heat which commonly attends the exhibition of a purgative one. When ingested, it is not changed to chyle by the action of the stomach, but it operates like the emollients, producing uneasiness, heaviness, and a sensation of anxiety about the epigastric region, which is caused only by the resistance it opposes to the digestive powers of this organ. Its passage in the intestinal tube is attended with the same phenomena; and it seems every where to act as a foreign body, fatiguing the organs by its presence. Therefore we soon experience the acceleration of the peristaltic motion, and hence the discharge of the remedy with the other contents of the intestines. The continued administration of laxatives, instead of promoting the inflammation of the gastro-intestinal mucous membrane, as that of purgatives would, produces debility of the stomach, anorexia, difficulty of digestion, and even diarrhœa; symptoms which are checked by the exhibition of excitant or tonic substances.

The general effects resulting from the proximate action of laxative medicines distinguish them also from purgatives; for instead of stimulating all our organs, they act in the same way as temperants and demulcents of which we shall speak in chapters XII. and XIII. According to the mode of administration of these substances, they may sometimes exercise a local action only, or at others produce no sensible change in the state of the organs with which they come in contact, but then they act on the general economy. Indeed, when a laxative remedy is administered in substance, or given in a very small quantity of menstruum, it occasions evacuations, without producing immediately any general phenomena, whilst if dissolved in a very large proportion of water its local action will be very slight, and its influence will be more especially felt by the general economy. We might of

course say with Dr. Barbier, that demulcents are nothing but laxatives which have lost their power in the digestive canal.

Most laxatives are furnished by the vegetable kingdom; we however, employ as such, some animal and mineral substances. The vegetable laxatives are composed of a saccharine matter, of mucilage and of a fatty oil. They are inodorous, of a sweet, insipid or acidulous taste, and yield to water their remedial principles.

From what we have just said of the action of these remedies, it is evident that their employment is preferable to that of purgatives, whenever it is requisite to promote alvine evacuations, in the inflammatory stage of an affection, the intensity of which might be increased by any excitation whatsoever; but, for the same reason, they are not calculated to produce all the secondary effects which we have indicated, when speaking of purgatives, and which are a consequence of the irritation produced by these remedies on the gastro-intestinal mucous surface. They are generally administered in a small quantity of water, and it is sometimes proper to combine them with a slightly stimulating substance in order to facilitate their action.

Laxative Mineral Substances.

Magnesia. *Magnesia usta.* Oxide of magnesium. Calcined magnesia. This substance is found in nature only in combination with acids, or with certain metallic oxides.

P. P. It is white, pulverulent, smooth to the touch, without either taste or odour, and of the specific gravity of 2.3.

C. P. It is composed of 100 of magnesium, and 68.156 of oxygen. It is insoluble in water, almost infusible, turns green the syrup of violets and combines with the carbonic acid of the air at a common temperature.

Prep. It is obtained by calcining in a crucible, the sub-carbonate of magnesia.

Th. E. In large doses, magnesia is a gentle purgative, and its employment is always followed with beneficial effects in cases of acidity of the primæ viæ, observable principally in people who use milk habitually, or after violent paroxysms of gout. In small doses, it acts no longer as a laxative, but it is frequently employed in this manner as an antacid, to neutralize the acids formed in the stomach under certain circumstances, and principally in pregnant women and in children. This remedy is also very beneficial in cases of poisoning by acids, on account of the great facility with which they combine with it, and of the harmlessness of the salts resulting from this combination.

D. & M. of Adm. As a purgative, ʒij. to ʒss.; as an antacid, gr. vj. to ʒj. and in cases of poisoning, ʒj. to ʒiv.——*Absorbent powder*, P. (Magnesia and sugar,

āā. e. p.) Dose, from gr. xij. to ℈ij.—Paris H. (Magnesia, gr. viij.; cinnamon, gr. j.) For a dose, twice a day.——*Magnesia lozenges*, P. (Magnesia, 1; sugar, 4; mucilage of gum tragacanth made with orange-flower water, q. s.) For 12 gr. lozenges.) Dose, from vj. to xij.——*Magnesia and catechu lozenges*, P. (Magnesia, 32; catechu, 6; cinnamon, 3; sugar, 64; gum tragacanth and cinnamon water, q. s.) For 12 gr. lozenges.

Sub-Carbonate of Magnesia. *Sub-carbonas magnesiæ.* It is found in nature in very small quantity only, and often impure.

P. P. This salt is found in the shops in the shape of cubic lumps, of a fine white colour, soft to the touch, inodorous, insipid, and of the specific gravity of 0.294.

C. P. It is composed, according to Mr. Dalton, of carbonic acid, 40; magnesia, 43; and water, 17. It is unalterable in the air, soluble in an excess of carbonic acid, in more than 2000 of cold water, and 9000 of this vehicle when boiling. It turns green the syrup of violets, and produces a strong effervescence with the acids by which it is decomposed, as well as by heat.

Prep. It is obtained by treating a solution of sulphate of magnesia by a boiling solution of carbonate of potassa.

Th. E. Its employment is the same as that of calcined magnesia, and it is frequently exhibited under similar circumstances. However, the latter substance is, in many instances, preferred to it, because it is not subject to produce, like the carbonate, a disengagement of carbonic acid, which fatigues the stomach. This gaseous production may, notwithstanding, be very serviceable in some cases in which the effervescent draughts are indicated. Finally, it is successfully exhibited in cases of gravel produced by a superabundance of uric acid.

D. & M. of Adm. Powder, ʒss. to ʒij; suspended in a mixture.——*Pulvis galactopæus*, R. (Sub-carbonate of magnesia, 4; orange peel and fennel seed, 1; sugar, 2.) Dose, from gr. xij. to ʒss. and above.——*Pulvis infantum*, R. (Sub-carbonate of magnesia, 8; cinnamon, 1; sugar, 4.)——*Pulvis magnesiæ compositus*, Den. (Sub-carbonate of magnesia, oleo-saccharate of fennel and rhubarb, āā. equal parts.) Dose, from gr. v. to xv., two or three times a day.——*Gaseous magnesia water*, Paris H. (Sub-carbonate of magnesia, ʒij.; diluted sulphuric acid, ʒx.; water, ℔iijss.) Dose, from ʒviij. to ℔j. a day.

Super-tartrate of Potassa. Cream of Tartar. *Potassæ supertartras. Cremor tartari.* This salt exists in grapes and in tamarinds. The dregs of wine contain a considerable quantity of this salt.

P. P. Its crystals are short tetraedral prisms, semitransparent, white, unalterable in the air, inodorous, of a tolerably acid taste, and of the specific gravity of 1.953.

C. P. Cream of tartar contains a very considerable proportion of super-tartrate of potassa, about seven or eight hundredths of tartrate of lime, and a small quantity of silica, albumen, iron, &c.

Insoluble in alcohol, it dissolves in fifteen of boiling, and sixty of cold water; but it may be rendered much more soluble by mixing with it a certain quantity of boracic acid or borate of soda, which renders the cream of tartar soluble in its own weight of cold water, and in the half only of this menstruum when boiling. This preparation is known by the name of *soluble cream of tartar*. Its aqueous solution is soon decomposed by the contact of the air.

Incomp. Subst. The salts of lime, of lead, and the strong acids.

Prep. It is obtained by dissolving in boiling water the *common tartar*, (a white or reddish crystalline matter which forms on the internal sides of the vessels in which wine has been kept,) mixing with it some clay, which precipitates the colouring matter, and then permitting the liquor to crystallize.

Th. E. The action of this substance varies according to the dose in which it is administered. In small doses, it is absorbed, and acts as a temperant, and in this quality it is employed in jaundice, foulness of the primæ viæ, &c. In larger doses, it principally spends its action on the mucous intestinal membrane, and induces alvine evacuations, especially when given in powder. Its taste, being rather less unpleasant than that of the other neutral salts we have already mentioned; and its operation being of a very gentle nature, its administration is very frequent. In France the soluble cream of tartar is generally preferred.

D. & M. of Adm. As a temperant, ʒij. to ʒiv. to ℔j. of water, taken occasionally. As a purgative, ʒj. to ʒij. in an electuary, or even ʒj. dissolved in ʒvj. to ʒviij. of water.——*Cream of tartar lemonade*, Paris H. (Cream of tartar, ʒj.; boiling water, ℔ij.) Dose, a cupful.——*Electuarium sulphuris compositus*, Guy's H. (Cream of tartar, ʒss.; flowers of sulphur, ʒj.; treacle, ʒiij.) Dose, cochl. min. j. once or twice a day.

Vegetable Laxative Substances.

Family Euphorbiaceæ.

Castor Oil. *Oleum ricini. Oleum ex semine ricini. Oleum palmæ christi.* A fatty oil obtained from the seeds of the *Ricinus communis*, Lin., a plant native of the East Indies and Africa, where it is said to be perennial, woody, and to attain a considerable height. It is cultivated in this country and in Europe, but in our temperate regions it is only an annual plant.

B. C. Stem straight, ramose, fistulous, glaucous and reddish; leaves alternate, peltate, palmate, with seven or nine lobes; flowers monoicous, united in extra-axillary and pyramidal clusters; male flowers, calix with five caducous divisions; ovary free, globular, three-sided and three-celled; one very short style; three stigmas; fruit, a capsule with three prominent sides, covered with prickles, and containing each one seed.

P. P. The seeds of the ricinus are oval, flattened on one side, convex and round on the other, of a variable size, generally of the size of a French bean; smooth, shining, of a gray colour,

with brown spots on their surface, with a fleshy and white appendix on the umbilicus; white inside; of a sweet taste at first, and afterwards acrid. The oil obtained from it, is of a yellowish-white, thick, viscous, and inodorous. It congeals only several degrees below the freezing point, and its specific gravity is greater than that of the other fixed oils.

C. P. From the recent experiments of Messrs. Lecanu and Bussy, castor oil submitted to distillation, has furnished a solid, spongy and yellowish residue, amounting to nearly two-thirds the quantity of the oil employed in the experiment, a very odorous volatile oil, which crystallizes on cooling, and two new acids which they call *ricinic* and *oleo-ricinic acids*, almost concrete, very acrid, to which they ascribe the active properties of the oil under consideration. Besides, it differs from the other fixed oils in this particular, that it is completely soluble in absolute alcohol and ether. Finally, it becomes easily rancid, and then acquires a very acrid taste.

Prep. It is obtained generally by expression in the same manner as almond oil, and called cold expressed, or by the intervention of boiling water. This latter process is still generally adopted in the West Indies, as producing the sweetest oil; but it is more apt to become rancid.

Th. E. The recent castor oil is a very mild laxative, very generally used in cases in which the effects of an irritant substance on the gastro-intestinal mucous membrane are to be apprehended, as in colics, dysentery, and strangulated hernia. It acts without occasioning the least irritation, and it may even be exhibited in cases of inflammation of the intestinal canal. But it is quite the reverse when it is rancid; it has then acquired an acrimony which renders it violently irritating, and produces effects nearly resembling those of the most energetic drastics. It ought never to be administered in this altered state. This fresh oil is employed with success as an anthelmintic; it seems to exercise upon the intestinal worms a special action which destroys them.

D. & M. of Adm. From ℥ss. to ℥ij., in a cup of light broth, tea, coffee, &c. ——*Castor oil purgative emulsion*, P. (Castor oil, 2; yolk of eggs and orange flower water, āā. 1; water, 4.) To be administered in two doses.——*Minorative mixture*, Paris H. (Castor oil, ℥j. to ℥ij.; tartaric syrup, ℥j.; succory water, ℥ij.)——*Purgative remedies*, Paris H. (Castor oil, ʒvj.; oxymel of squill, ʒiv.; syrup of buck-thorn, ℥j.) To take in two doses.——*Enema olei ricini*, Guy's H. (Castor oil and honey, āā. ℥j.; decoction of oat meal, ℥x.)

Family Leguminosæ.

Purging Cassia. *Cassiæ fistulæ pulpa. Cassia fistula*, Lin. *Cathartocarpus fistula*, Persoon. A tree, native of Egypt and of India, and naturalized in America. P. U. The pulp of the fruit.

B. C. Trunk from forty to fifty feet high, of the size of a walnut tree; leaves large, composed of from five to six pairs of oval and acute folioles, from three to five inches long; flowers large, yellow, in clusters, hanging from the axilla of the leaves; calix, five deep caducous divisions; corolla, five unequal petals; ten stamina; fruit, a pod divided in a great number of pulpy and monospermous cells.

P. P. The fruit of the cassia fistula, known in commerce by the name of *cassia pods*, is a cylindrical legumen from one to two feet long, of the size of the thumb, marked with a longitudinal band on each suture, divided internally by horizontal partitions into numerous cells, each containing an ovoid, flattened, shining and very hard seed located in the pulpous matter. The pulp is the only part employed in medicine; it is of a very dark brown colour, of a very faint smell, of a sweet, mucilaginous and subacid taste.

C. P. According to Mr. Vauquelin, it is composed of an extractive principle, sugar, gelatin, gluten, gum, and of a fibrous matter. It is almost entirely soluble in water. Alcohol and sulphuric ether dissolve also several of its principles.

Incomp. Subst. The aqueous solution of cassia fistula, which is of a reddish brown colour, is rendered turbid by the addition of alcohol. Hydro-chloric acid produces a very abundant yellow precipitate.

Prep. Split the pod lengthwise, and scrape off the interior of the cells; in this manner the pulp and seeds are obtained mixed together. By expressing this pulp through a hair sieve the purified pulp is obtained.

Th. E. This substance is laxative and temperant. Its employment is indicated when in the course of a phlegmasia, it is necessary to keep the bowels open. It acts very gently; but occasionally gripes and produces flatulency. It is a laxative well adapted for children and delicate females; but its administration is contra-indicated in cases of hypochondria and in atonic affections. It enters into the composition of the lenitive electuary. (See article Senna, page 403.)

D. & M. of Adm. Purified pulp, ℥j. to ℥ij. Decoction, ℥ij. to ℥iv. to ℔ij. of water.——*Compound pulp of cassia fistula*, or *Tronchin's marmelade*, Paris H. (Pulp of cassia fistula, manna, oil of sweet almonds, āā. ℥ij.; orange-flower water, ʒij.) Dose, from ʒij. to ʒiv., three or four times a day.——*Confectio cassiæ*, L.——*Electuarium cassiæ*, U. S., E. (Pulp of cassia, 4 parts; tamarind pulp and manna, āā. 1 part; syrup of orange peel, or of damask rose, 4 parts.)—L., D. (Fresh pulp of cassia and syrup of roses, or oranges, āā. ℔ss.; manna, ℥ij.; pulp of tamarind, ℥j.) Dose, from ℥ss. to ℥j.——*Extract*, P. (Same doses.)——*Conserva cassiæ*, P. (Extract of cassia, 16; syrup of violet, 12; sugar, 3; essential oil of orange tree flowers, q. s.) Dose, from ʒij. to ℥j.

Tamarind. *Pulpa tamarindi. Tamarindus indica*, Lin. A tree, native of the East Indies and Egypt, which has been na-

turalized in some parts of South America. P. U. The pulp of the fruit.

B. C. Trunk elevated, ramose at top, and furnished with a brown bark; leaves pinnate, from ten to fifteen pairs, without an odd foliole; flowers of a greenish yellow, in hanging clusters at the extremity of the branches; calix turbinate, with four caducous lobes; corolla, three petals; three monadelphous stamina in the inferior part; ovary straight, falciform; fruit, a thick arcuate pod, strangulated at the articulations, and containing a pulp, in the substance of which are located some flattened and irregularly quadrilateral seeds.

P. P. The tamarind of the shops is in the form of a viscous pulp, of a reddish-brown colour, inodorous, of a very considerable acid taste, and containing the seeds and remains of vegetable fibres.

C. P. This pulp, according to Mr. Vauquelin's analysis, contains citric acid, 9.40; super-tartrate of potassa, 3.25; tartaric acid, 1.55; malic acid, 0.45; sugar, 12.50; gum, 4.70; vegetable gelatin, 6; water and lignous fibres, 61.95. Copper is also occasionally found in it, which seems to be owing to the vessels in which it has been prepared. Water takes up its active principles.

Incomp. Subst. The salts with base of potassa, the alkaline carbonates, lime water, and tartar emetic.

Prep. The ripe fruit is divested of its lignous envelope, and the pulpy part is evaporated slowly in brass pans, on a moderate fire.

Th. E. By the acidity predominating in the pulp of tamarinds, this substance is nearly connected with the temperant and cooling remedies. The simple infusion of this pulp in water constitutes a very pleasant and useful beverage in febrile diseases; but if boiled, and the quantity increased, it acts then on the intestinal canal, which it moves gently, and provokes alvine evacuations. It is, of course, both cooling and slightly purgative. It is exhibited with advantage in the latter form, in the cases where it is desirable to obtain a laxative effect without irritating the intestinal mucous membrane. It is seldom employed alone, and is generally associated with other purgatives.

D. & M. of Adm. Purified pulp, ʒj. to ʒiv. As a temperant, infusion, ʒj. to ʒij. to Ibij. of water. As a laxative, decoction, ʒij. to ʒiij. to Ibij. of water. ——*Electuarium aperiens*, Den. (Pulp of tamarind, 4; senna, 2; super-tartrate of potassa, 1; syrup of manna, 8.) Dose, from ʒss. to ʒj.——*Veal broth with tamarind.* Paris H. (Pulp of tamarind, ʒij.; veal broth, Ibij.)——*Serum lactis tamarindinatum*, B. (Pulp of tamarind, 1; whey, 16.) Dose, by tumblerfuls.

Family Jasmineæ.

Manna. *Manna.* A concrete juice, furnished by the Flowering Ash, *Fraxinus ornus*, Lin., and the Round Leaved Ash, *Fraxinus rotundifolia*, Lam., trees growing in Italy,

and principally in Calabria, and in Sicily, where they thrive best.

B. C. Trunk about twenty-five feet high; leaves imparipinnate, composed of seven or nine folioles; flowers white, in ramose panicles at the extremity of the branches; calix very small, four-divided; corolla, four linear divisions; fruit, a narrow and elongated capsule, terminated by a plain and obtuse wedge.

P. P. Three different kinds of manna are found in commerce, viz.: the manna in tear, or flake manna, *Manna lacrymata*, which is in round, solid, and light pieces, of a white colour, of a saccharine, and having scarcely any nauseous taste; the manna in sorts, *Manna communis*, is in masses formed of yellowish flakes, united together by a brownish juice, of a less saccharine taste than the former, but insipid and nauseous; the fat manna, *Manna inferior*, is in soft, viscous masses, of a brown colour, of a disagreeable taste, and mixed with a great many impurities.

C. P. According to Thénard, this substance is composed of a peculiar principle, which he has called *Mannite*, and which is found to exist in manna in variable proportions; of crystallizable sugar, of an uncrystallizable mucous matter having a nauseous taste, and to which manna appears to be indebted for its purgative properties.

Mannite is white, crystallized in silky flakes composed of small semitransparent needles, of a saccharine taste, soluble in water and alcohol, principally when warm, and incapable of producing the vinous fermentation, and, consequently, of furnishing alcohol.

Prep. Manna is obtained by incisions made in the bark of the ash tree; the juice exudes, and dries in the air.

Th. E. Manna is a very mild purgative; it appears even that, when it is recently collected, it has no action on the intestinal canal; since in the country where it is gathered, it is employed for the same purposes as sugar. By the alterations produced by age, it acquires its laxative property. Indeed, the older it is, the more powerful are its effects. *Mannite*, according to Mr. Vassal, induces no purgative effect; consequently the flake manna, which contains this principle in a greater proportion, is not so active as the manna in sorts, which is generally preferred to the former. This substance is principally exhibited in inflammatory diseases, when there is occasion to apprehend the irritation which might be produced by a more energetic purgative. It has also the advantage of being well adapted to children, and persons of a weak constitution. It is very much used, and frequently, in conjunction with other purgative substances.

D. & M. of Adm. ℥j. to ℥iij. in water, or rather in milk.——*Aqua laxativa viennensis*, A. (Manna, 8; senna, 6; super-tartrate of potassa, 1; water, 48.) Dose, from, ℥ij. to ℥iv.——*Compound mixture of manna*, Paris H. (Manna, ℥ij.; rhubarb, ℥iv.; water, ℥iv.) To be taken in two doses.——*Demulcent mixture of manna*, Paris H. (Flake manna, ℥ij.; sweet almonds and orange flower water, āā. ℥iv.; syrup of peach flowers, ℥j.; infusion of liquorice, ℥iv.) For three draughts.——*Electuarium mannæ*, F. (Manna, sugar, and fennel water, āā. 16; orris root, 1; oil of sweet almonds, 8;) Dose, cochl min. j. three or four times a day.——*Syrupus mannæ*, Den., R., Pr., Pol. (Manna, 48; senna, 32; fennel seed and ginger root, āā. 1; sugar, 176; water, 192.) Dose, from ℥ss. to ℥j.

Honey. *Mel.* A saccharine substance, produced by the bee, *Apis mellifica*, Lin. an hemenopterous insect, which prepares it by means of the saccharine juices it collects in the nectaries of flowers.

P. P. The purest honey is liquid, white, and transparent; such is that of Mahon, of Mount Hymettus, &c. that of Narbonne and of Gatinais, which comes next in quality, is granulated, thicker, and white; finally, the common honey, which is less esteemed, is of a brown-red colour, and contains a granulated matter, and frequently eggs, and larvæ of bees. The taste of the two first kinds is sweet and agreeable, and their smell slightly aromatic. On the contrary, the brown honey possesses an acrid taste and a disagreeable smell.

C. P. The best honey is formed of liquid and uncrystallizable sugar, of crystallizable sugar analogous to that of grapes, and of an aromatic principle. The common kinds contain besides, wax, acid, and even remains of larvæ. Honey is soluble in water, in this state it undergoes vinous fermentation, producing an alcoholic liquor, called hydromel.

Th. E. In substance, or dissolved in a small quantity of water, honey acts as a gentle laxative, but, generally, it loses this property when diluted with water; it becomes then cooling and emollient. It is frequently employed to edulcorate tisans, but as a laxative it is seldom used; it is the excipient of a great number of preparations, and the base of *oxymels* and *mellita*, or *medicated honeys.*

D. & M. of Adm. As a laxative, ℥j. to ℥ij. in water or milk.——*Syrup*, P. ℥j. to ℥ij. to edulcorate drinks.——*Hydromel*, P. (White honey, 1; tepid water, 16.) By cupfuls.——*Vinous hydromel*, P. (White honey, 160; tepid water, 830; yeast, 4.)

Externally. Vinous lotion, Paris H. (Honey, ℥ij.; red wine, Ħj.)——*Ceromel*, B. (Honey, 6; wax, 1.)

Mercurialis Amara, Lin. An annual plant, native of Europe, belonging to the family *Euphorbiaceæ*, and growing plentifully in cultivated places; it has a virose smell, and a bitter and salt taste. It possesses demulcent and laxative properties. The

decoction of this plant is employed in enema, and the boiled leaves are used in poultice. It enters into the composition of several officinal preparations, the most important of which is the *Mercurial honey*, P. (Juice of mercurialis and honey, āā. equal parts,) which is frequently used as an injection, and as a laxative, in the dose of ℥ij. to ℥iv.

Pale Rose, or Hundred Leaved Rose. *Rosæ pallidioris petala. Rosa centifolia.* A shrub, belonging to the family *Rosaceæ*, cultivated in gardens, and highly valued for the beauty and odour of its flowers. P. U. The petals.

They are pale, and possessed of a sweetish, sub-acid, and slightly bitter taste, and are endowed with some laxative properties. A *Syrup of pale rose* is prepared with them, P. (Juice of pale roses and sugar, equal parts.)——*Syrupus rosæ*, L. (Petals of roses, 1; sugar, 3; boiling water, 4.) which is frequently employed as a purgative for children, in the dose of ʒij. to ℥j. They enter also into the composition of the *Rose ointment*, P. (Fresh petals of roses, 2; axungia, 1,) which is applied over excoriated nipples, or chapped lips. Finally, and this is their most general employment, they are used for preparing the *Distilled water of roses*, P., *Aqua rosæ*, U. S., P., L., E., D., Pr., Pol., A., R., F., B., which is used as a menstruum and aroma for certain medicinal preparations.

The Flowers of the Common Peach Tree, *Persica vulgaris*, are of a slight bitter taste, and purge gently without griping. They are given in an aqueous infusion, in the dose of ʒij. to ʒiv. to ℔j. of water, and a syrup is prepared from them, *Peach flowers syrup*, P. (Fresh peach tree flowers, 4; boiling water, 12; sugar, 17.) It is a common purgative for children.

Linum catharticum, Lin., a small annual plant, of the family *Linaceæ*, growing in meadows, was administered in infusion. Dose, from ℥ij. to ℥iv. to ℔j. of water; but its action is so weak and uncertain that it is now quite obsolete.

CHAPTER XII.

TEMPERANT OR REFRIGERANT REMEDIES.

The name of *Refrigerant*, *(refrigerare*, to cool,) is given to substances which moderate the too great activity of the organs, and act more especially by diminishing the rapidity of the circulation, and the production of animal heat. They are called also *antiphlogistic.*

All the remedies belonging to this class possess an acid taste more or less marked. Their local action upon the tissues, and especially on the mucous membrane, induces the contraction of the capillary vessels, paleness of the parts, &c. When taken into the circulation, their proximate action is scarcely appreciable in a healthy state: but it is more marked when the circulation is more active, the animal heat increased, and, in a word, when the functions are in a state of morbid excitement. If administered then in a proper manner, they lessen the force and frequency of the pulse, moderate the animal heat, quench the thirst, increase the cutaneous perspiration, and the secretion of urine; in a word, they diminish all the febrile symptoms. Taken in large doses, they may irritate the digestive organs, and occasion alvine evacuations. It has been observed, that when their employment was too long continued, they were apt to produce debility of the digestive organs, general emaciation, paleness of the skin, &c. When the stomach is the seat of a slight irritation, the use of refrigerants may subdue it; but if any ulcerations, or other serious organic lesions have taken place, these remedies produce a bad effect on the state of the patient.

The refrigerant remedies are indebted for their virtues to the presence of a weak acid, such as the citric, malic, oxalic, tartaric, acetic, &c. edulcorated with a large proportion of water. Most of these are of a vegetable nature; their component elements, if we except their acid, are nearly the same, and their action on the economy is very similar, so that they may be employed almost indifferently.

Refrigerant Mineral Substance.

Boric or Boracic Acid. *Acidum boracicum.* Homberg's sedative salt. It is found in the waters of several lakes of Tuscany, and combined with soda in the state of *borate* in India and Thibet.

P. P. This acid is solid, in the form of white scales, soft to

the touch, inodorous, of a slight acid taste, and of a specific gravity of 1.479.

C. P. Boracic acid contains 27 of boron, 73 of oxygen, and about 40 per cent. of water of crystallization. Heated, it melts, loses its water, and changes to a hard, transparent, and unalterable glass. It dissolves in 13 of boiling, and 35 of cold water. It is very soluble in alcohol.

Prep. It is obtained by the decomposition of the common borax of the shops by sulphuric acid.

Th. E. It was formerly highly valued as a cooling medicine, but is now very seldom employed except as a gargle in gangrenous affections of the pharynx, and of the amygdalæ.

D. & M. of Adm. Gr. vj. to ʒj. to ℔ij. of water, as a lemonade.——*Sedative mixture*, Paris H. (Boric acid, ʒj.; simple syrup, ℥jss.; infusion of lime tree flowers, ℥iv.) Dose, by table-spoonfuls.

Nitrate of Potass. (See page 233.)

Refrigerant Vegetable Substances.

Vinegar, or Impure Acetic Acid. *Acetum vini*, seu *Acidum aceticum dilutum.* This acid exists in a great number of vegetables, either free, or combined with potassa.

P. P. Common vinegar is a limpid liquid, of a yellow or red colour, more or less intense, according as it has been prepared from red or white wine; it possesses a pure acid taste, and a sharp and agreeable odour. The *pure acetic acid*, generally called *radical vinegar*, is liquid, but it congeals in a crystalline mass at 13° Centig. (50° Fahr.) Its taste is caustic, its odour very strong and penetrating, and its specific gravity is 1.063.

C. P. The anhydrous acetic acid, according to Messrs. Gay-Lussac and Thénard, is formed of carbon, 50.224; oxygen, 44.-147; and hydrogen, 5.629. Vinegar contains acetic acid, a good deal of water, mucilage, a colouring extractive matter, frequently malic and tartaric acids, sulphates of lime and potassa, and a small quantity of alcohol. That which is obtained from the distillation of wood contains almost always a small quantity of empyreumatic oil. Heated, this acid volatilizes without decomposition, and boils below 100° Centig. (212 Fahr.) It attracts the moisture of the air, is very soluble in water, and less so in alcohol, and, finally, it forms soluble salts with most bases.

Prep. Vinegar is commonly prepared in France by exposing wine to the contact of the air, in large casks, in a temperature of from 15° to 20° Centig. (59° to 68° Fahr.) As for the concentrated acetic acid, it is obtained by distillation from the acetate of copper. In the United States vinegar is mostly obtained from cider or beer.

Th. E. The concentrated acetic acid is never exhibited internally. Its employment is confined to inhaling its vapour in cases of syncope, &c. Vinegar, taken internally, in its pure state, causes pains and cramps of the stomach, and its use continued for any length of time, produces emaciation, anorexia, &c. Diluted with water, so as to render it palatable, it no longer irritates the stomach, but its particles are taken into the circulation, and act as a refrigerant. Consequently, it is administered with success in the cases for which these remedies are indicated. It is also employed in gargles, and, externally, as a detersive, a refrigerant, and a resolvent. The exhibition of vinegar is often recommended in cases of poisoning by narcotic substances; but Dr. Orfila has demonstrated that as long as the poison remains in the stomach, it is apt to facilitate its absorption, and to increase its activity; whilst, when the poisonous substance has been expelled from the stomach, its employment is then very beneficial. Vinegar is very frequently used, and is employed as a menstruum for a great number of remedial substances.

D. & M. of Adm. ℥ss. to ℥ij., or rather a sufficient quantity to form an agreeable acid drink, to ℔ij. of water sweetened with sugar or honey.—P. *Oxymel simplex*, L., D., R., Den., Pol., F., Pr., B. (Vinegar, 1; honey, 2.) Dose, from ℥ij. to ℥j. and more, in an aqueous drink.——*Syrupus aceti*, P., D. (Vinegar, 4; sugar, 7.)—A., R. (Vinegar, 1; sugar, 2.) Dose, from ℥j. to ℥ij. to edulcorate temperating drinks.——*Acetic gargle*, Paris H. (Strong vinegar, q. s.; honey of roses, ℥j.; barley water, ℥iv.)

Tartaric Acid. *Acidum tartaricum.* It is found in nature, only in combination with potassa or lime.

P. P. This acid is solid, and crystallizes in large scales slightly divergent, or in flattened prisms, unalterable in the air, colourless, inodorous, and of a very acid taste.

C. P. It is composed, according to Messrs. Gay-Lussac and Thénard, of carbon, 24.050; oxygen, 69.321; and hydrogen, 6.629. Heated, it melts, swells up, and then it is decomposed. Water and alcohol dissolves it. Its aqueous solution becomes easily mouldy. It reddens the tincture of litmus.

Incomp. Subst. Lime water, the salts of baryta and strontia, and acetate of lead.

Prep. The super-tartrate of potassa is decomposed by means of carbonate and hydro-chlorate of lime; then the insoluble tartrate of lime, obtained by this process, is acted on by diluted sulphuric acid, which forms with the lime an insoluble salt, and liberates the tartaric acid which is dissolved in water, in order to obtain it in crystals.

Th. E. In small doses, tartaric acid is a refrigerant medicine, which may be exhibited with great advantage in cases of gastric

irritation, in fevers, &c. In large doses, it acts as an irritant, and may induce serious accidents.

D. & M. of Adm. Powder, gr. v. to xv. with sugar; in solution, ʒss. to ʒj. to ℔j. of water.——*Syrupus acidi tartarici*, P. (Tartaric acid, 5; simple syrup, 250; distilled water, 16.) Dose, from ʒj. to ʒij. to ℔ij. of water.——*Lemonade of tartaric acid.* (Tartaric syrup, ʒij.; water, ℔ij.) by half tumblerfuls.

Family Aurantiaceæ.

Lemon. *Fructus citri medicæ.* Fruit of the *Citrus medica*, Lin. A tree native of warm climates, and cultivated in hot-houses in the temperate and northern regions.

B. C. Trunk straight, slender; leaves oval, acuminate, dentate, of a yellowish-green, supported by an unwinged peduncle; flowers numerous, of a violet-red colour externally, otherwise similar to those of the orange-tree; fruit ovoid, and terminated by a conical apex.

P. P. The lemon, the peel of which we have already described, page 209, contains a considerable quantity of juice of an acid and agreeable taste, and of a very pleasant odour.

C. P. According to Mr. Proust, lemon juice contains citric acid, 1.77; bitter principle, gum and malic acid, 0.72; and water, 97.51.

Incomp. Subst. The sulphuric, nitric, oxalic and tartaric acids, and lime water.

Th. E. In small doses, lemon juice stimulates the stomach and facilitates digestion. Diluted with water, it is employed with great success as a refrigerant in inflammatory diseases. Dr. Broussais has remarked that it was, of all the acidulous substances, that which suited best the stomach, when this organ was labouring under an acute phlogosis. It is also very useful in stopping certain irritations of the stomach in which there is a constant vomiting. Its administration is recommended in jaundice, scurvy, and generally in all kinds of febrile diseases in which the thirst is great and the animal heat very much increased.

D. & M. of Adm. *Lemonade*, Paris H. (Lemon, No. j.; simple syrup, ʒij.; water, ℔ij.)——*Lemon syrup*, P. (Lemon juice, 4; sugar, 7.)——*Syrupus limonum*, L., D. (Lemon juice, 2; sugar, 3.)——*Syrupus succi* seu *acetositatis citri*, R., F., Pol., Den., Pr. (Lemon juice, 1; sugar, 2.) Dose, ʒj. to ʒij. in a watery menstruum. Lemon juice enters into the composition of effervescent draughts, such as Rivière's anti-emetic mixture.——*Julepum succi limonum*, Guy's H. (Lemon juice and green mint water, āā. equal parts.) Dose, ʒj. in sweetened barley water, three or four times a day.

Orange. *Malum aurantii.* Fruit of the *Citrus aurantium*, Lin. The peel of which we have described, page 208, contains a juice which differs from that of lemon only in its being less acid, more sweet and bitter. It is, however, composed of the same

principles. Diluted with water, and properly edulcorated, it is frequently used under the name of *orangeade*, in inflammatory diseases. A syrup made with this fruit, possessing the refrigerant properties, is also sometimes employed.

Citric Acid. *Acidum citricum.* It exists in variable proportions in the lemon, orange and the red acid fruit.

P. P. This acid is white, crystallizes in rhomboidal prisms, unalterable in the air, inodorous, of a very acid taste. Specific gravity, 1.034.

C. P. According to Messrs. Gay-Lussac and Thénard, it is composed of carbon, 33.81; oxygen, 59.859; and hydrogen, 6.330. Heated, it is decomposed, and is partly changed into a new acid, called *pyro-citric.* It is very soluble in boiling water, and in three-fourths of its weight of cold water. Alcohol dissolves a smaller proportion. The aqueous solution, concentrated in a small degree, is easily altered on exposure to the air.

Prep. It is obtained by saturating the lemon juice with pulverized chalk, and treating the insoluble citrate which is formed, by diluted sulphuric acid.

Th. E. It is employed instead of lemon juice for making lemonades, and it acts then like the other refrigerant medicines. In large doses and concentrated, it might produce serious accidents, on account of its caustic action.

D. & M. of Adm. ℈j. to ℔j. of sweetened water.——*Citric acid lozenges*, P. (Citric acid, 6; essential oil of lemon, 1; sugar, 390; mucilage of gum tragacanth, q. s., for 12 gr. lozenges.)

Red and White Currant. *Fructus grossulariæ.* Fruit of the *Ribes rubrum*, Lin. A shrub native of Europe, common in woods and hedges, and cultivated in our gardens.

B. C. Stems straight, without thorns; leaves five-lobed, dentate, pubescent; flowers in pendulous clusters; calix almost plane; anthers didymous, style bifid; ovary inferior; fruit, a globular berry, white or red, umbilicate and polyspermous.

P. P. The properties of the currant are too generally known to require description.

C. P. When ripe, it contains malic acid, 2.41, citric acid, 0.81; sugar, 6.24; gum, 0.78; animal matter, 0.86; lime, 0.29; woody fibres and seeds, 8.01; water, 81.10.

Th. E. The same as that of the preceding substances.

D. & M. of Adm. Expressed juice, from ℥ij. to ℥iv. to ℔ij. of sweetened water.——*Syrupus ribium*, P., Den., Pol., B., A. Dose, from ℥j. to ℥ij. and more for edulcorating refrigerant drinks.——*Currant jelly*, P. Any quantity.

Family Urticeæ.

Mulberry. *Fructus mori nigræ.* Fruit of the *Morus nigra*, Lin. A tree native of Persia, cultivated in Europe and in this country.

B. C. Trunk from twenty-five to thirty feet high; leaves alternate, cordiform, pubescent; flowers uni-sexual, generally dioicous, without a fleshy involucrum; calix four-divided, becoming fleshy; male flowers, in a spike; female, distinct and ovoid; ovary lenticular and monospermous; two sessile stigmas; fruit becoming nippleform, by soldering laterally together.

P. P. Mulberries are ovoid berries of a blackish red colour, containing a viscous juice of the same colour, of an acidulous and agreeable taste.

C. P. They contain a good deal of mucilage, sugar, tartaric acid, &c.

Th. E. These berries are less active than the preceding substances; they are employed in the same cases. The syrup of mulberry is very much used in the treatment of anginæ and aphthæ.

D. & M. of Adm. Expressed juice, any quantity in sweetened water.—— *Syrupus*, P., L. (Mulberries and sugar, āā. e. p.) Dose, from ℥j. to ℥ij. and more.

Family Polygoneæ.

Sorrel. *Acetosæ folia. Rumex acetosa*, Lin. A perennial plant, native of Europe, growing in meadows, and cultivated in gardens. P. U. The leaves.

B. C. Root repent, brown; stem herbaceous, from one to three feet high; radical leaves petiolate, oval, obtuse, entire; the caulinary, sessile, acute, amplexicaule; flowers small, greenish, in terminal panicles; calix six-lobed, tubulated at the base; six stamina inserted on the calix; three glandulary stigmas; fruit, a capsule with three prominent angles.

P. P. All the parts of this plant are acid, and have an agreeable taste.

C. P. They contain a large quantity of super-oxalate of potassa, some tartaric acid, mucilage, and fecula. Water dissolves its active principles.

Th. E. Sorrel is daily used as aliment. Its pleasant acidity has caused it to be ranked among the refrigerant medicines. Boiled in water, it communicates to it a sour taste, and it is frequently employed in this way in order to facilitate the action of purgatives.

The expressed juice of this plant has been recommended as a powerful anti-scorbutic, and its leaves bruised and boiled, are frequently used as a maturative poultice.

D. & M. of Adm. Decoction, manip. j. to ij. to ℔ij. of water.——*Vegetable broth.* (Sorrel, leek leaves, chervil, and lettuce, āā. any quantity; fresh butter and salt, q. s.; water ℔ij. to ℔iv.) By cupfuls.——*Refrigerant and diuretic juices,* P. (Sorrel, lettuce, chervil, and house-leek, āā. e. p.) Dose, from ʒj. to ʒij.——*Conserva acetosæ,* R. (Sorrel, 1; sugar, 2.)

Oxalic Acid. *Acidum oxalicum.* It exists in the juice of several vegetables, most commonly combined with lime and potassa.

P. P. This acid is solid, in the form of prismatic, quadrangular, elongated, transparent, and inodorous crystals, and of a caustic taste.

C. P. According to Messrs. Gay-Lussac, and Thénard, oxalic acid is formed of carbon, 26.556; oxygen, 7.689; and hydrogen, 2.745. It is soluble in water and alcohol, and more so when hot. Its crystals, by dissolving in cold water, produce a slight noise, which may be a test to recognize this substance. Heated, it melts in its water of crystallization, volatilizes, and is decomposed.

Incomp. Subst. All the salts of lime.

Prep. It is obtained from the decomposition of the super-oxalate of potassa by the acetate of lead. The precipitate is treated with hydro-sulphuric acid, and the liquor left to crystallize.

Th. E. Concentrated, and in large doses, it acts on the economy like the corrosive poisons. Nevertheless, Drs. Coindet and Christison have ascertained, by numerous experiments, that this acid, diluted with water, is readily absorbed, and exercises a very deleterious influence upon the brain and the spinal marrow, and that this action is so much the more marked and rapid in proportion as it is the less concentrated. In small doses, and dissolved in a large quantity of water, it is occasionally employed as a refrigerant; but it is better to use the tartaric acid.

D. & M. of Adm. Gr. xii. to ʒj. to ℔ij. of sweetened water.——*Oxalic acid lozenges,* P. (Oxalic acid, 6; essential oil of lemon, 1; sugar, 388; mucilage of gum tragacanth, q. s. for twelve-grains lozenges.

The Salt of Sorrel, or Bi-oxalate of Potassa, *Potassæ super-oxalas,* which is furnished by several species of Rumex, especially the *R. acetosella,* Lin. and of the *Oxalis acetosella,* Lin. is white, in small, acute, and even prickly crystals, opaque, unalterable in the air, and of an acid and slightly bitter taste. It is soluble in water, and is decomposed by the salts of lime, which form instantly with it an insoluble oxalate. Its action is the same as that of the oxalic acid, only it is less energetic. It has been sometimes administered as a refrigerant in the dose of ʒss. to ʒj. to ℔ij of sweetened water, and is the base of *Fascio's dry lemonade,* (Bi-oxalate of potassa, ʒiij.; sugar, ℔j.; essential oil

of lemon, gut. viij.) of which, ℥j. is dissolved in ℔j. of water, for common drink in febrile diseases.

Several fruit of an acidulous and saccharine taste are also used as cooling and refrigerant substances, but as they are still more used as light aliments, and of course generally known, we will abstain from giving their description. Such are, in the family *Rosaceæ*, the STRAWBERRIES, fruit of the *Fragaria vesca*, Lin. the RASPBERRIES, furnished by the *Rubus idæus*, Lin. CHERRIES, fruit of the *Cerasus vulgaris*, Miller; several species of APPLES, furnished by the *Pyrus malus*, Lin. the fruit of the *Berberis vulgaris*, Lin. of the family *Berberideæ*; the POMEGRANATE, furnished by the *Punica granatum*, Lin. belonging to the family *Myrtineæ*, &c.

With the juice of the above-mentioned fruit, very agreeable acidulated drinks are prepared, as well as syrups, which are used during the winter, for sweetening and acidulating refrigerant drinks.

CHAPTER XIII.

DEMULCENT REMEDIES.

The demulcent substances, (*demulcere*, to soften,) are the remedies, the action of which has a tendency to relax the tissues with which they come in contact, to lessen their tonic action, and blunt their sensibility.

All these substances possess nutritive and medicinal properties. They are generally inodorous, and their taste is insipid, viscous, or sweet. Their mode of action seems to be the same, whether applied to the skin, or introduced into the digestive canal, and to depend, mostly, on the water, which is their common menstruum. In the first instance, they appear to relax the cutaneous tissue, to swell it, and diminish its redness and sensibility, and subdue more or less completely the inflammatory symptoms of which it is the seat. In the second, they produce similar changes in the parts with which they come in contact, and abate the internal heat, thirst, cough, &c. at the same time that they prove a light aliment best suited to the inflammatory stage of the organs.

Although the most marked effects of the demulcents are local, they have others which we shall consider presently. In fact, the relaxing action of these remedies seems to be susceptible of being transmitted by contiguity of organs, as we have already mentioned, Chapter I. § 17. Their internal administration continued for a certain time, produces also more or less debilitating effects on the general economy. Thus, we frequently see them to diminish the strength and frequency of the pulse, subdue the irritation of organs distant from those with which they are in contact. These secondary effects are principally owing to the sympathies they induce, and to the absorption of the large quantity of water in which they are administered. For, by the digestive action of the stomach, these substances are changed into chyme, and, besides, we know from numerous and accurate experiments, that the increase of the proportion of water in the blood, relatively to that of the red globules, is a powerful means of lessening the vital energy.

All the demulcent remedies are furnished by organic substances containing certain proximate principles, to which they are indebted for their properties, and of which we shall indicate the general character in order to avoid repetitions. The most conspicuous are—

Gum, *Gummi*, is found in variable proportions in every part of herbaceous plants, in fruit, leaves, and in a considerable number of roots and woody stems. It is not always perfectly identical in its composition. However, this principle is always solid, uncrystallizable, inodorous, insipid, soluble in water, and forming with it a kind of jelly, called *mucilage*, insoluble in alcohol, by which it is precipitated from its solutions. It is decomposed by nitric acid, and changed partly into mucic acid.

Sugar. *Saccharum.* A principle, contained more or less profusely in vegetables, having a sweet taste, and which, by the action of water and leaven, is decomposed, and changed into alcohol and carbonic acid by undergoing a number of changes, constituting the *alcoholic fermentation.* We distinguish several kinds of sugar, viz.: the *common* or *cane sugar*, which is furnished by the sugar cane, the red beet, the sugar maple, &c.; the *grape sugar*, which exists in most fruit, the mushroom sugar, &c.

Fecula or Starch, *Fecula*, exists in considerable proportions in the seeds of all the *leguminosæ*, *gramineæ*, and in several roots. This substance is white, pulverulent, inodorous, and insipid, composed of oxygen and hydrogen, in suitable proportions to obtain 56 of water, and 43 of carbon. It is insoluble in cold water, alcohol, and ether, dissolves in boiling water, and forms then an hydrate, called *starch.* Weak nitric acid dissolves it cold; but when hot, it changes it into the malic, oxalic, &c. acids. By the action of very diluted sulphuric acid, and with the agency of heat, fecula is changed into a substance nearly similar to grape sugar; finally, it forms with iodine a combination of a fine blue colour.

Fixed or Fatty Oils, *Olea fixa*, exist in a considerable quantity in the seeds of several plants. They are not perfectly similar to each other; but, in general, they are liquid at the common temperature, viscous, of a yellowish colour, of a weak, and sometimes very disagreeable taste, and of a lesser specific gravity than water. They are composed of *stearin*, a fatty substance, solid at the ordinary temperature; of *elain*, another fatty substance, liquid at the same temperature; and lastly, of a little colouring and odorous matter; but the proportion of these substances differs in the different oils. They are insoluble in water; but they become miscible with this liquid with the assistance of gum, or albumen, &c. Several of them are dissolved more or less completely in alcohol and ether. They become rancid by the protracted action of the air, and form with the alkalies compounds, soluble in water, and called *soaps.* (See page 236.)

Animal Oils. Their properties and composition differ but little from those of the fixed oils.

Albumen, *Albumen*, which is found in all the soft parts of animals, and forms almost alone the white of eggs, the serum of the blood, &c. Its properties differ according as it is liquid or solid. The liquid albumen is viscous, transparent, colourless, heavier than water, slightly alkaline, owing to the small proportion of soda it contains, and very soluble in water. Heat and alcohol coagulate it, and render it solid, white, insoluble in water, soluble in the alkalies and in acetic acid. It is composed of carbon, 52; oxygen, 23; hydrogen, 7; and nitrogen, 15.

Gelatin, *Gelatina*, which is never found in the humours of animals, but enters, in a large proportion, into the composition of their soft and solid parts. In the dry state, it is known in commerce by the name of *Glue*. It is very little soluble in cold, but dissolves easily in boiling water, from which it is precipitated by alcohol, tannin, &c. The solution of gelatin forms, on cooling, a more or less thick jelly.

The demulcent remedies are employed with much advantage to subdue the internal as well as the external inflammations. From what we have said above, it follows that these substances would be contra-indicated in cases of atony, and towards the end of certain chronic diseases maintained by general debility. They are administered in the form of tisans, loochs, &c. internally; and of cataplasms, lotions, &c. externally.

Vegetable Demulcent Substances.

Family Leguminosæ.

Gum Arabic. *Gummi arabicum.* A proximate principle, which exudes from the *Mimosa nilotica*, Lin., a tree growing on the banks of the Nile, &c.

B. C. Trunk from thirty to forty feet high, ramose; leaves bi-pinnate, composed of ten *pinnulæ*, supporting each about twenty pairs of small and oval folioles; flowers yellow, small, united in a capitulum, in the axilla of the leaves; stamina very numerous, monadelphous, two of them much longer than the calix; fruit, a long and narrow pod, offering from seven to eight strangulations, each containing one seed.

P. P. Gum arabic is found in commerce, in dry and semi-transparent pieces of various sizes, rugose and slightly cracked on the surface, friable, irregularly round, colourless, or yellowish, inodorous, of a sweet and viscous taste. Specific gravity, 1.515.

C. P. It is composed, according to Messrs. Gay-Lussac and Thénard, of carbon, 42.23; oxygen and hydrogen in suitable pro-

portions to form 57 of water. It contains besides, a small quantity of saline substances; otherwise its chemical properties do not differ from those of gums in general. (See page 426.)

Th. E. Among the demulcent substances, gum arabic is the one most frequently used in the practice of medicine. It is found useful in acute phlegmasia, especially that involving either the digestive, pulmonary, or urinary organs. It enters into the composition of a great number of officinal preparations.

D. & M. of Adm. Powder, ʒss. to ʒj. in a mixture.——*Solution of gum arabic*, Paris H. (Gum arabic, ʒss. to ʒj.; water, ℔ij.; as a common drink.)——*Mucilago acaciæ*, L. *Mucilago gummi arabici*, P., E., D., B., F., A. (Gum arabic, 1; boiling water, 2.) It is commonly employed as a menstruum for other substances.——*Gummous mixture*, Paris H. (Gum arabic, ʒj.; water, ʒiij.; simple syrup, ʒj.; orange-flower water, ʒij.;) by table-spoonfuls.——*Mistura mucilaginosa*, Guy's H. (Mucilage of gum arabic, ʒviij.; mixture of gum ammoniac, ʒij.; mint water, ʒv.; simple syrup, ʒj.) Dose, ʒij. three or four times a day.——*Emulsio acaciæ arabicæ*, E. (Mucilage of gum arabic, ʒij.; sweet almonds, ʒj.; sugar, ʒss.; water, ℔ij.)——*Emulsio arabica*, D. (Gum arabic pulverized, ʒij.; bleached sweet almonds, purified sugar, āā. ʒss.; decoction of barley, Oj.)——*Emulsio gummosa*, F. (Gum arabic, 1; simple emulsion, 24; water, q. s.) Dose, from ʒij. to ʒiv. and more, several times in the day.——*Gummous looch*, Paris H. (Gum arabic, ʒss.; simple syrup, ʒj.; pectoral infusion, ʒiv.)——*Pectoral julep*, Paris H. (Gum arabic, ʒj.; althæa syrup, ʒss.; water, ʒiv.)——*Alkaline gummous powder*, or *Vegetable soap*, P. (Gum arabic, 8; crystallized carbonate of potassa, 1.) Dose, from gr. xii. to xx. and more.——*Pulvis gummosus*, B., A., Pr. (Gum arabic, gum tragacanth and sugar, āā. equal parts.) Dose, from ʒj. to ʒij. every two or three hours.——*Gum arabic paste*, commonly called *Althæa paste*, P. (Gum arabic and sugar, āā. 8; fresh althæa root and orange-flower water, āā. 1; water, 45.;) any quantity.——*Syrupus gummi arabici*, P. (Gum arabic and water, āā. 1; simple syrup, 4.) Dose, ʒj. and above, for edulcorating demulcent drinks.——*Trochisci gummosi*, E. (Gum arabic, 4; starch, 1; sugar, 12; rose water, q.s.;) any quantity.

Gum Senegal, *Gummi senegalense*, furnished by the *Mimosa senegal*, Lin., a tree very nearly related to the preceding, and growing in the torrid regions of Africa. It does not differ materially from gum arabic with respect to its physical and chemical properties. It is now more plentiful in commerce than gum arabic, and is at present employed under the same name.

As for the Common Gum, *Gummi nostras*, which exudes spontaneously from several trees of the family *Rosaceæ*, such as the plum, cherry, apricot trees, &c., it differs principally from those we have just now mentioned, by its not being completely soluble in water, and by forming with this liquid a thicker mucilage. It is very seldom employed, and only when the others cannot be procured.

Gum Tragacanth. *Tragacanthæ gummi*. A gummous juice furnished by the *Astragalus gummifer*, Labillardière, and *A.*

verus, Olivier; shrubs growing in Asia Minor, and several other countries in the East Indies.

B. C. Stem furnished with sharp thorns, from two to three feet high; leaves composed of six to eight pairs of small and hairy folioles; flowers small, yellow, sessile, in a dense spike; calix tubular, five-toothed; corolla papilionaceous; five petals; ten diadelphous or monadelphous stamina; fruit, a pod divided in two cells by a false dissepimentum.

P. P. Gum tragacanth is solid, opaque, white or yellowish, not friable, in thin, and more or less large contorted pieces, or in minute filaments assuming the form of a worm, or finally, in amorphous lumps, without odour or taste.

C. P. It is composed, according to Bucholz, of 57 of a gum similar to gum arabic; of 43 of a substance insoluble in cold water, but completely soluble in this menstruum when boiling, and in potassa, ammonia and hydro-chloric acid, which substance has been called *adragantin*, (tragacantin.) One part of gum tragacanth forms with water a mucilage as viscous as twenty-five of gum arabic.

Th. E. This substance possesses the same properties as gum arabic. It is most commonly employed in order to give consistence to sundry pharmaceutical preparations, and to suspend in solution some insoluble powders.

D. & M. of Adm. Powder, from gr. x. to xv. in a looch or julep of ℥iv.——*Mucilago tragacanthæ*, P., B., A. (Gum tragacanth, 1; water, 14.)—L., D. (Gum tragacanth, 1; water, 32.) Dose, from ℥j. to ℥ij.——*Pulvis tragacanthæ compositus*, L. (Gum tragacanth, starch, and gum arabic, āā. 3; sugar, 7.) Dose, from ʒss. to ʒij., in a menstruum.

Liquorice. *Liquiritæ radix. Glychyrrhiza glabra*, Lin. A shrub growing in the south of France, Spain, Italy, &c. P. U. The root.

B. C. Stem straight, glabrous, from three to four feet high; leaves imparipinnate, with thirteen oval folioles, covered with a viscous substance; flowers violet, in axillary spikes; calix tubular, bilabiate, unequally five-toothed, carena formed of two distinct petals; ten diadelphous stamina; fruit, a flattened pod containing from three to six seeds.

P. P. The liquorice root is long, cylindrical, of the size of the finger, brownish externally, yellow internally, of a sweet taste, slightly acrid, and of a faint smell.

C. P. It contains, according to Mr. Robiquet, a peculiar saccharine substance, which cannot be fermented, called *glycyrrhizin;* a matter analogous to *asparagin*, but crystallizable; starch, albumen, a resinous oil, thick and acrid; some phosphate and malate of lime and magnesia; finally, some lignous fibres. Cold water dissolves its sugary and demulcent principles; but it does not take up the acrid oil, which dissolves only in warm water.

Th. E. Liquorice is used most commonly in hospitals, or dis-

pensaries to edulcorate demulcent drinks. The powder is also frequently used as excipient of other remedies.

D. & M. of Adm. Powder, gr. xij. to ʒj.; cold infusion, ʒij. to ʒiij. to ℔ij. of water.——*Extractum glycyrrhizæ*, P., L., D. Dose, from ʒss. to ʒj.——*Liquorice paste*, P. (Extract of liquorice and sugar, 384; gum arabic, 768; orris root, 3; essential oil of aniseed, 1.)——*Trochisci glycyrrhizæ glabræ*, E. (Extract of liquorice, gum Arabic, āā. 1 part; refined sugar, 2 parts; boiling water a sufficient quantity.)——*Trochisci glycyrrhizæ cum opio*, U. S., E. (Opium, ʒij; tincture of balsam of tolu, f.ʒss.; simple syrup, f.ʒviij.; extract of liquorice softened by hot water, gum Arabic in powder, āā. ʒv.) To form in troches, each weighing 10 grains.

Melilot. *Melilotus officinalis*, Lam. An annual plant, a native of Europe, and common in meadows and hedges, possessing a very agreeable and fugacious smell, and some demulcent properties. Its decoction is used occasionally in lotions and injections.

Family Ulmaceæ.

[Slippery Elm. *Ulmus fulva*, Mich. *U. rubra*, Muhl. *U. aspera*, Marsh. A tree of moderate size, a native of North America. P. U. The inner bark.

B. C. Stem seldom above thirty feet high, trunk slender, dividing in numerous branches, furnished with a rough and light-coloured bark; leaves oval-oblong, acuminate, serrate, pubescent on both sides, almost equal at the base; buds tomentose, of a tawny colour; flowers red, sessile, succeeded by membranous seed-vessels of a compressed and oval shape, containing one oval seed.

P. P. The bark of the young branches is of a whitish-yellow, extremely mucilaginous and devoid of any sensible astringency; that of the old branches is thicker, of a darker colour, slightly mucilaginous and astringent.

Th. E. The decoction, or infusion of this bark has been very usefully employed as a demulcent, in affections of the urinary passages and in some diseases of the alimentary canal. In dysentery, diarrhœa and cholera infantum, it has proved a very efficient medicine, and is daily prescribed in these instances. It has been exhibited also with success in catarrhal affections, pneumonia, and consumption.

The internal use of the decoction of this bark, has been found very efficacious in lepra vulgaris, and in other varieties of cutaneous diseases; but it is seldom found to show its good effects in these complaints, before its use has been continued for several months. The more diuresis it produces the more certain is its beneficial operation. This bark, pulverized, has lately been used in this city, boiled with water or milk in the form of pap, as a light nourishment for children affected with diarrhœa, dysentery,

&c. One drachm of the powder, boiled with water or milk and sweetened with sugar, forms a common bowlful of this pap.

As an external application to gun-shot wounds, it was used by the surgeons of our revolutionary army, and also by those of General Wayne's army, who defeated the Indians, in August, 1794. Poultices made of this bark were applied to the wounds, which were soon brought to suppuration and to a disposition to heal. When tendency to mortification was evident, this bark, bruised and boiled in water, produced the most surprising good effects. On those occasions the soldiers used it as nutriment, and Dr. Joseph Strong, of Philadelphia, who served as a surgeon in the western army, relates that a soldier who lost his way, supported himself for ten days upon this mucilage and that of sassafras. The mucilage of the slippery elm, as that of flaxseed and many other demulcents, has been found by recent experience to be singularly beneficial when applied to chilblains, cutaneous eruptions, and various kinds of sores and ulcers.

The bark of the White or American Elm. *Ulmus americana*, Lin. Possesses nearly the same properties, but is less mucilaginous.]

[The Sassafras Pith, *Medula sassafras*, obtained from the young branches of the *Laurus sassafras*, Lin., furnishes an abundance of pure mucilage, frequently exhibited in conjunction with the acetates of lead or zinc, as a wash in inflammation of the eyes, or as an injection in blennorrhœa. One drachm of pith of sassafras boiled in one pound of water, yields a remarkably limpid mucilage, very viscous, and nevertheless incapable of suspending permanently a fixed oil or copaiba. This mucilage keeps much longer than those of gum arabic, tragacanth or flaxseed, and does not seem to loose its viscosity by the addition of alcohol, or by a small quantity of any strong acid. The tincture of iodine and the solutions of the salts of iron have no action upon it. Trituration furnishes more mucilage than ebullition.]

Family Malvaceæ.

Marsh Mallow. *Althææ radix, folia et flores. Althæa officinalis.* A perennial plant, indigenous to Europe, growing on the banks of rivers and marshy places, and flowering in June and July. P. U. The root, leaves, and flowers.

B. C. Stem herbaceous, from three to five feet high; leaves cordiform, tomentose, smooth; flowers of a rose-white colour, in panicles at the top of the stem; calix double, the exterior nine-divided, the interior five-divided; ovary free, rounded; style simple; fruit, monospermous capsules, united in a circle at the base of the style.

P. P. The marsh mallow root, such as is found in commerce, is stripped of its epidermis; it is fusiform, fleshy, of the size of the finger, of a white colour, inodorous, and of a viscous taste.

C. P. All the parts of this plant, and the root especially, contain a large quantity of gum and fecula. Boiling water takes up its principles.

Th. E. The marsh mallow possesses the demulcent properties in the highest degree. It is one of the emollient substances most commonly used in some parts of Europe, as well internally as externally in the treatment of phlegmasiæ.

D. & M. of Adm. Decoction, ℥j. to ℔ij. of water.——*Decoctum althææ officinalis*, E. (Althæa root, 2; dry raisins, 1; water, 42.) Dose, by cupfuls.——*Syrupus althææ*, P. (Althæa root, 3; sugar, 96; water, 32.)—L., E., Pr., F., R., Den. (Althæa, 6; water and sugar, āā. 72; orange-flower water, 1.) Dose, from ℥j. to ℥ij. to edulcorate emollient drinks.——*Pasta althææ, Pâte de guimauve*, Pr., Pol., R. (Althæa root, 2; gum Arabic and sugar, āā. 12; orange-flower water, 1; boiling water, 48; white of eggs, q. s.)——*Trochisci althææ composita*, R. (Althæa, 2; orris root, 1; sugar, 36; mucilage of gum Arabic, q. s.)

Externally, decoction, in lotions, baths, injections, fomentations, &c.

Family Felices.

[Flowering Fern. *Osmunda spectabilis*, Pursh. A beautiful native fern, scarcely distinguishable from the *O. regalis* of Europe, seems to deserve a place in the materia medica for its demulcent and nutritive properties. The root contains a rich mucilaginous substance, capable, by being boiled in water or milk, to thicken them to the consistency of a syrup. This mucilage is of a quality well calculated to defend the internal parts against the irritating effects of acrimonious humours. Consumptive patients have derived the greatest advantage from its use, and it is even reported to have performed cures in some instances. The roots are to be boiled in milk, and this should be recommended as the principal food and nutriment of the patient. There is no doubt that in dysentery, diarrhœa, cholera infantum, &c. the employment of this root would be very serviceable. On account of its soft mucilage, it has been found to be an excellent discutient, useful as an external application to parts contused or bruised.]

The *roots* and leaves of the Hollyhock, *Alcea rosea*, Lin., of the common Mallow, *Malva sylvestris*, *&c.* and many other plants belonging principally to the family *Malvaceæ*, possess the same properties, and are daily employed to fulfil the same indication as the preceding.

Cacao Oil, or Butter, *Butyrum* seu *Oleum cacao*, a fixed

oil, obtained from the seeds of the *Theobroma cacao*, Lin., a tree, native of Mexico.

B. C. Trunk branchy, from thirty to forty feet high; leaves oval, acuminate, smooth; flowers reddish, united in extra-axillary bunches; calix caducous, deeply five-divided; ten stamina, five of which are sterile; fruit, an oval, and five-celled capsule; pericarp hard and undehiscent.

P. P. Cacao, several species of which are found in commerce, is generally of the form and size of an almond, brownish internally, of a sweet and agreeable taste, and of a peculiar odour. The oil obtained from it is concrete, of a yellowish-white, possessing the smell and taste of the almond itself.

C. P. The composition and chemical properties of this oil do not differ from those of the fatty oils. (See page 426.)

Prep. This oil is obtained by expression, or by boiling the bruised cacao nuts in water. The oil floats on the surface.

Th. E. Cacao, after undergoing torrefaction, is employed in manufacturing chocolate, which, as an aliment, is in general use. The oil is employed as a demulcent in phlegmasiæ of the stomach, lungs, and urinary passages. It often proves beneficial in cases of cancer of the stomach. Externally, it is applied to hæmorrhoidal tumours, on chapped lips and excoriated nipples.

D. & M. of Adm. ʒj. to ʒij., in an emulsion, or in pills.
Externally, for suppositories, salves, &c.

Family Borragineæ.

Borrage. *Boraginis herba et flores. Borrago officinalis*, Lin. A biennial plant, a native of Europe, very common in cultivated grounds, and flowering in May and June. P. U. The leaves and flowers.

B. C. Stem herbaceous, straight, furnished with rough hair; radical leaves very large, oval, supported by long canaliculate petioles; caulinary leaves sessile, oval, lanceolate, and hairy; flowers blue, paniculate, distant from each other at the extremity of the branches; corolla rotate, orifice closed by six connivent, lanceolate, and acute processes; anthers close to each other.

P. P. Borrage has hardly any smell, and possesses an herbaceous and mucilaginous taste.

C. P. It contains a mucilaginous substance, 18; a matter containing nitrogen, soluble in water, and insoluble in alcohol, 13; acetate, and other salts of potassa, 12; salts of lime, 0.5; and nitrate of potassa, 0.5. Water dissolves all its active principles.

Th. E. Borrage is frequently employed as a demulcent, diuretic, and sudorific, in a great number of inflammatory cases.

D. & M. of Adm. Decoction and infusion, manip. j. to ij. to Ibij. of water. ——*Expressed juice*, P. ʒij. to ʒiv. ——*Extract*, P. ϑj. to ʒj.

Comphrey. *Consolidæ majoris radix et folia. Symphytum officinale*, Lin. A perennial plant, a native of Europe, and naturalized in this country, growing in meadows, and flowering in May and June. P. U. The root and leaves.

B. C. Stem herbaceous; leaves oval, lanceolate, acute; flowers white, or of a rose-colour, in spikes at the extremity of the branches, corolla tubular, furnished with five lanceolate and acute processes.

P. P. The root of this plant, formerly frequently used, is large, elongated, blackish on the outside, white inside, at first of an insipid and mucilaginous taste, but becoming afterwards slightly astringent.

C. P. It contains a good deal of mucilage, and seems to contain also a little gallic acid; but in such small quantity that it cannot have any influence on its mode of action.

Th. E. Comphrey is tolerably demulcent; its good effects in active hæmorrhage of the lungs and intestines, &c. have been highly commended. Its supposed astringent virtues are now no longer believed in, and almost discarded.

D. & M. or Adm. Decoction, ℥ss. to ℥j. to Hbij. of water.——*Syrup*, P. Dose, from ℥j. to ℥ij., in a mixture, or for edulcorating demulcent drinks.

The Bugloss, *Anchusa italica*, De Cand., and the Spotted Lung-wort, *Pulmonaria officinalis*, Lin., are perennial plants, indigenous to Europe, and occasionally found in this country in gardens, or in their neighbourhood. These plants are very nearly related to the preceding, are possessed of the same properties, and are used to fulfil the same indications. The different species of *Pulmonaria*, native of this country, are probably endowed with similar virtues.

Finally, the Hounds-tongue, *Cynoglossum officinale*, Lin., indigenous both to Europe and America, growing in dry places, and possessing a very disagreeable odour, has long been recommended for its very remarkable narcotic virtues; but it is now ascertained that it is almost inert, and is nearly obsolete; it enters, however, into the composition of several officinal preparations, among which is that of the *Cynoglossum pills*. (See page 320.)

Family Lineaceæ.

Linseed. Flax Seed. *Lini semen. Linum usitatissimum*, Lin. An annual plant, very generally cultivated. P. U. The seeds.

B. C. Stem simple, about two feet high; leaves elongate, narrow, and pointed; flowers blue, terminal; calix persistent; corolla campanulate; fruit, a spherical capsule, surrounded by the calix, and containing ten monospermous cells.

P. P. Linseed is small, oblong, flattened, shining, brown externally, yellowish-white and oily internally, of a viscous and sweetish taste.

C. P. It contains a large quantity of mucilage and fatty oil. Boiling water takes up the mucilage.

Th. E. Linseed is very frequently employed as an emollient. It is principally administered in decoction in the phlegmasiæ of the urinary passages, in order to facilitate the secretion, and to diminish the irritation existing in these parts. It is also given in inflammations of the lungs and of other organs. This seed, reduced to a coarse powder, *(flax seed meal,)* is the base of the emollient cataplasms most commonly used.

D. & M. of Adm. Decoction, ℥ss. to ℥j. to Ibij. of water.——*Infusum lini*, L., E.——*Infusion of linseed*, Paris H. (Linseed, 2; liquorice. 1; water, 64.) Dose, ℥ij. frequently repeated in the course of the day.——*Decoctum lini compositum*, Guy's H. (Infusion of flax seed, Ibij.; nitrate of potassa, ℥j.; manna, ℥j.) Dose, a tumblerful every now and then.

Externally. Decoction, in enema, lotions, baths, fomentations.——*Demulcent enema*, Paris H. (Flax seed, ℥ij.; water, Ibij.; olive oil, ℥ij.)——*Linseed meal*, in cataplasms.——*Demulcent cataplasm*, Paris H. (Flax seed and barley meals, āā. e. p.; decoction of marsh mallow, q. s.)

Linseed Oil, *Oleum lini*, is obtained from the seeds above described. It is limpid, of a deep or greenish-yellow colour, of a disagreeable taste and smell, and of the specific gravity of 0.932. Its composition is the same as that of the other fixed oils, except that it dries very quickly. For medicinal purposes, it is prepared by cold expression; the common oil of the shops is obtained by torrefaction of the seeds, and its odour and taste are extremely unpleasant. This oil is demulcent and slightly laxative; it is seldom used internally on account of its disagreeable taste, however, it may be administered in doses of from ℥ij. to ℥iv. Finally, it is often employed as a vehicle in the preparation of sundry liniments.

Family Rosaceæ.

Sweet Almond. *Amygdalæ dulces. Amygdalus communis*, Lin. var *Dulcis*. A tree cultivated in the south of France, Italy, Spain, and in the East Indies. P. U. The kernel of the fruit.

B. C. Trunk elevated, straight, ramose; leaves lanceolate, of a light green colour on both sides; flowers white or of a rose-colour, large, extra-axillary; calix tubular, reddish, caducous; twenty or more stamina; fruit, a fleshy drupe, furnished with a tomentose and dry pellicle, containing a rugose stone with one or two kernels.

P. P. The sweet almond is ovoid, depressed, formed of two white and oleaginous cotyledons, covered over with a brownish skin, odourless, and of a sweet and agreeable taste.

C. P. Sweet almonds are composed, according to Mr. Boullay, of fixed oil, 54; albumen, 24; liquid sugar, 6; gum, 3; water, 3.50; lignous fibres, 4; and acetic acid, 0.5: the skin contains tannin. Triturated with water, almonds produce a white mixture, called *emulsion* or *milk of almond*, which possesses a very remarkable analogy with animal milk. This liquid contains a great quantity of oil, kept in suspension in water by the presence of sugar, gum, and albumen.

Th. E. The milk of almond, as well as the other preparations made from this substance, is frequently exhibited to abate the inflammation of the alimentary canal, and generally all febrile affections.

D. & M. of Adm. *Lac amygdalæ*, P. (Sweet almond and sugar, āā. 2; orange flower water, 1; water, 32.)—D. (Blanched sweet almonds, ℥jss.; sugar, ℥ss.; water, Oijss.)——*Mistura amygdalarum*, U. S. (Almonds, ℥j.; refined sugar, ℥ss.; water, Oijss.)—L. (Almond confection, ℥ij.; distilled water, Oj.)——*Emulsio amygdali communis*, E. (Sweet almonds, ℥j.; sugar, ℥ss.; water, lbijss.)——*Emulsio amygdalarum*, R., F. (Sweet almonds, 4; sugar, 1; water, 32.) Dose, from ℥ss. to ℥j. frequently in the day.——*White looch*, P. (Sweet almonds and oil of sweet almonds, āā. 24; bitter almonds, 4; gum tragacanth, 1; sugar, 36; water, 192.) By table-spoonfuls.——*Confectio amygdalarum*, L. (Sweet almonds, 8; gum Arabic, 2; sugar, 5.) Any quantity mixed with water, for preparing instantly the milk of almond.——*Orgeat syrup*, P. (Sweet almonds, 16; bitter almonds, 8; sugar, 108; orange-flower water, 3; water, 64)——*Syrupus amygdalarum*, F. (Sweet almonds, 24; bitter almonds, [illegible]ge-flower water, 8; water, 96; sugar, q. s.)—Den., Pr., Pol. (Sweet [illegible]s, 4; sugar, 18; orange-flower water, 1; rose-water, 12.) Dose, from ℥ss[illegible]j. to edulcorate refrigerant drinks.

Bitter Almonds contain, like the preceding, a large quantity of sweet oil, with a certain proportion of Prussic acid. They are not demulcent, and are seldom used, except to scent emulsions.

Oil of Sweet Almonds. *Oleum amygdalarum dulcium.* A fatty oil expressed from the sweet almonds.

P. P. It is liquid above 10° Centig. (50° Fahr.) of a greenish-white colour, of a smell analogous to that of sweet almonds, and of the specific gravity of 0.932.

C. P. This oil turns rancid with the greatest facility. Its composition does not differ from that of the fixed oils in general.

Prep. It is obtained by submitting the almonds to a powerful pressure, without the assistance of heat.

Th. E. This substance, taken in small quantity, acts as a demulcent. In larger doses it becomes laxative. It is frequently employed in the inflammatory affections of the pulmonary organs. It is very useful as a gentle purgative for children or people of a delicate constitution. It enters into the composition of several officinal oily liniments and embrocations.

D. & M. of Adm. ℥ss. to ℥j. mixed with syrup or the yolk of eggs.——*Looch without emulsion*, P. (Oil of sweet almond, 18; gum tragacanth, 2; sugar, 36; orange-flower water, 9; water, 108.)——*Looch with the yolk of eggs*, P. (Oil of sweet almonds, 3; yolk of egg, 1; althæa syrup, 2.;) by spoonfuls.——*Oleaginous mixture*, Paris P. (Oil of sweet almonds and pectoral infusion, āā. ℥ij.; simple syrup, 1.)——*Linctus oleosus*, Guy's H. (Oil of sweet almonds, syrup of lemon, and conserve of roses, āā. ℥j.; compound powder of gum tragacanth, ʒiij.;) by tea-spoonfuls.

Externally. Simple cerate, P. (Oil of sweet almonds, 3; wax, 1.)——*Gallen's cerate*, P. (Oil of sweet almonds, 4; wax, 1; distilled rose-water, 3.)

Olive Oil, *Oleum olivæ*, obtained from the fruit of the *Olea europæa*, Lin., belonging to the family *Jasmineæ*, a tree native of Asia, cultivated on a large scale in the south of Europe. It is viscous, of a greenish-yellow colour, becoming solid a few degrees above the freezing point, of an agreeable taste and smell, and of the specific gravity of 0.9153. Its composition is the same as that of the other oils; it is not desiccative, and does not become rancid as easily as that of sweet almond. This oil is daily employed as an aliment. Its properties are emollient and demulcent, and in sufficient quantity it acts as a laxative. It is employed in the inflammatory affections of the lungs and of the intestinal canal. It proves very beneficial in cases of poisoning by acrid substances, and is used with advantage as an anthelmintic. It is administered in the dose of from ʒij. to ℥j., mixed with water by means of mucilage. Finally, it enters into the composition of a great number of plasters and liniments which are daily used.

White or Poppy Oil, is obtained by expression from the seeds of the *Papaver somniferum*, Lin. It is sweet, and is used as an aliment. It is often employed in the same cases as those we have just described. The same is the case with the *Walnut oil*, obtained by cold expression from the *Juglans regia*, Lin., a tree of the family *Juglandeæ*, a native of Persia, and cultivated throughout Europe, and now introduced in this country.

Family Gramineæ.

Sugar. *Saccharum.* A proximate principle existing in a great number of vegetables, but principally obtained from the Sugar Cane, *Saccharum officinarum*, Lin., a native plant of Asia, naturalized and cultivated on a large scale in the West India islands, and some parts of the American continent.

B. C. Stems straight, from twelve to fifteen feet high, cylindrical, jointed at small intervals; leaves sheathing, two or three feet long, acute at the end, rough, and about two inches wide; flowers on a very large, pyramidal and terminal panicle; spikelets composed of three flowers.

P. P. Pure sugar is solid, white, translucid, in masses formed of a confused collection of small crystals, or crystallized in six-sided prisms, colourless and transparent. These crystals are called *Sugar candy*. Its taste is sweet and generally known, and its specific gravity is 1.6065. Finally, it is unalterable in the air, and phosphorescent when rubbed in the dark. The impure or *raw sugar* is in a coarse, crystalline powder, of a gray or yellowish colour, of a taste slightly different from the pure sugar.

C. P. Sugar, according to Messrs. Gay-Lussac and Thénard, is composed of carbon, 42.47; oxygen, 50.63; and hydrogen, 6.90. It dissolves in its weight of cold water, and in almost any proportion of boiling water. One part of water and three of sugar form a solution called *Syrup*. Concentrated alcohol has hardly any action upon it; weak alcohol dissolves it, but not so well as water. Sulphuric acid carbonizes sugar; nitric acid decomposes and changes it into oxalic acid. The alkalies and lime principally render it bitter, astringent, and uncrystallizable. Heated, sugar melts, puffs up, blackens, and exhales a peculiar sweetish odour.

Prep. It is obtained by boiling in large kettles, the expressed juice of the sugar cane, to which is added a certain quantity of milk of lime in order to separate the fecula and mucilage. The syrup thus obtained is concentrated by evaporation, then left to crystallize. The sugar is then permitted to drain in order to separate the molasses, or uncrystallizable sugar, and thus is obtained the brown or raw sugar. To purify or refine it, it must be dissolved in a small quantity of water; the syrup clarified with the white of eggs, or with ox blood, and the colouring matter separated by means of animal charcoal. It is then poured into conical moulds, where it is permitted to crystallize. Finally, it is freed from the coloured syrup which it still retains, by applying on the base of the cone of sugar, a bed of clay moisted with water, which by filtering through the sugar accomplishes its purification.

The numerous employments of this valuable substance are too generally known to require any further remarks. It is very seldom administered by itself as a remedy; but it is the excipient or condiment of a great number of pharmaceutical preparations.

Sugar Maple. *Acer saccharinum*, Lin., of the family *Acerineæ*. A native tree, which furnishes a large quantity of sugar. Sugar has of late been obtained with great success in France from the roots of the red beet, *Beta vulgaris*, Lin., a garden plant of the family *Chenopodeæ*.

Dog-Grass. *Radix graminis. Gramen caninum. Triticum repens*, Lin. A perennial plant, very common in uncultivated grounds. P. U. The root.

B. C. Root repent; stems straight, about two feet high; leaves soft and green; spike elongate, compressed; spikelets distichous, unarmed, and formed of from four to five flowers.

P. P. Dog-grass root is long, cylindrical, thin, knotty, white internally, yellowish and skinny externally, inodorous, of a farinaceous and sweet taste.

C. P. It contains, according to Mr. Chevallier, uncrystallizable sugar, fecula, mucilage, an aromatic matter nearly similar to vanilla. According to this chemist, it contains a sufficient quantity of saccharine matter to yield, by fermentation, a certain quantity of alcohol. Water dissolves its active principles.

Th. E. Among the demulcent substances, dog-grass is one of the most frequently used in France. It is exhibited in most of the inflammatory and febrile diseases, and especially in those of the urinary passages. It was formerly recommended as a powerful diuretic, and was employed as such in dropsies; but we know at present this opinion to be erroneous.

D. & M. of Adm. Decoction, ℥ss. to ℥j. to Ibij. of water.——*Dog-grass*, P. ——*Common tisan*, Paris H. (Dog-grass, 4; liquorice, 1; water, 160.)——*Expressed juice*, P. Dose, from ℥ss. to ℥j.——*Extractum liquidum*, seu *Mellago graminis*, Den., Pol., Pr., A. (Fresh dog-grass, 2; water, 1.) Dose, from ʒj. to ʒij. and above.

Barley. *Hordei semina. Hordeum vulgare.* A plant, the different varieties of which are cultivated throughout Europe and America. P. U. The seeds.

B. C. Culm from two to five feet high, fistular; leaves alternate, sheathing, plane, lanceolate, acute and rough; flowers hermaphordite, in a close spike at the extremity of the stem, formed by a dentate axis bearing three sessile flowers on each tooth; calix, two-valved; corolla, two-valved; the exterior valve with a long stiff awn finely dentate on the edges; three stamina; fruit ovoid, with a truncated apex, and marked with a longitudinal furrow.

P. P. Barley is ovoid, yellowish, hard, farinaceous, of a sweet and saccharine taste. Two other sorts of barley are to be met with in the shops, one known by the name of *husked barley*, is deprived of its cortical envelope, which is bitter and slightly acrid; the other, called *pearl barley*, is in white, smooth, and in more or less round grains.

C. P. According to Mr. Proust, barley meal is composed of starch, 32; sugar, 5; gum, 4; gluten, 3; yellow resin, 1; and *hordein*, 55. This last principle differs from starch, which it resembles by its external appearance, by its being rough to the touch, very much like saw dust, and completely insoluble in water. Malt or barley fermented, then dried in a kiln, contains hordein,

12; starch, 56; sugar 15; gum, 15; and gluten, 1. Finally, the cortical envelope of this seed contains a bitter principle. Boiling water takes up its demulcent principles.

Prep. For medical use, barley is deprived of its husk by being put between two mill-stones, and formed into little, round grannules, by means of a peculiar machine.

Th. E. Barley is one of the demulcent substances most commonly used. It is exhibited in the form of decoction in almost all inflammatory affections. The meal of barley is frequently mixed with that of flaxseed for the preparation of emollient poultices; finally, *beer*, an alcoholic drink, generally known, and used principally in northern countries instead of wine, is prepared from malt.

D. &. M. of Adm. *Pearl barley*, Decoction, from ℥j. to ℥ij. to Hbij. of water. ——*Decoctum hordei*, U. S., L., D., E. (Barley, ℥ij.; wash it first in cold water, and boil it for a short time in about half a pint of water; throw away this liquid; then pour upon the barley, boiling water, Oiv. or Ov.; boil it next, until half the quantity is evaporated.)—P. (Pearl barley, 1; althæa syrup, 2; water, 80.)——*Decoction of barley*, Paris H. (Barley, ℥j.; liquorice root, ʒj.; water, Hbiij.)——*Decoctum hordei compositum*, U. S., D. (Decoction of barley, Oiv.; figs and raisins, āā. ℥ij.; liquorice, ℥ss.;) reduce to one-half.—L. (Decoction of barley, Oij.; sliced figs, ℥ij.; liquorice root, ℥ss.; stoned raisins, ℥ij.; water, Oj.; boil down to two pints, and strain.)——*Decoctum hordei acidulatum*, R. (Barley, 3; simple oxymel, 2; water, 60;) as a common drink.

Externally. Decoction, in lotions, fomentations, gargles, injections.——*Acidulated gargle*, Paris H. (Decoction of barley, ℥vj.; vinegar, ℥ij.——*Barley meal*, in cataplasms.——*Resolvent poultice*, Paris H. (Barley meal, ℥viij.; soap, ℥iv.; water, q. s.)

Rice. *Orizæ semen. Seed of the Oriza sativa*, Lin. A plant native of India, now cultivated in Italy, Spain, and America. It is very generally known, and daily used as an aliment, especially in certain countries. It differs from the other *Cerealia* by its containing no gluten, and by its being almost entirely composed of amilaceous fecula. It is frequently used as an emollient in inflammatory diseases, especially those of the intestinal canal. It was formerly recommended as an astringent, and advised as possessing this property in diarrhœa and dysentery; but it has been ascertained that it acts only as an emollient. It is given in decoction, *Rice water*, edulcorated with syrup.

Oat Meal, *Grutum*, is prepared by freeing from the husks, and coarsely pulverizing the seeds of Oats, *Avena sativa*, Lin., an annual plant cultivated almost every where. Oat meal contains a large quantity of starch, sugar, a fatty oil, and a bitter principle. This substance, which is the principal part of the alimentary subsistence of the poorest class of some parts of Great Britain, is slightly nourishing, and is frequently used as an emollient in almost all the inflammatory affections, especially in those of

the lungs. It is administered in decoction more or less thick, and properly edulcorated; generally known by the name of *Gruel*, or *Gruel water*.

Starch, or Amylaceous Fecula, *Amylum*, is a peculiar principle existing in a great number of vegetables, and principally extracted from the *Cerealia*, especially from Wheat, *Triticum æstivum*, and *T. hibernum*, Lin., annual plants, cultivated in almost every country. This substance is white, pulverulent, of a granular and crystalline appearance, rough to the fingers, insipid, inodorous, and unalterable in the air. It is found in commerce in the form of quadrangular prisms, irregular, but, however, pretty much alike. It is insoluble in cold water, alcohol, and ether; warm water reduces it to a sort of jelly, which is considered as an hydrate. Heated, starch melts, turns black, and is decomposed. Torrefaction renders it soluble in water, and it becomes in its nature very much like gum. Finally, in contact with iodine, it forms combinations of a more or less intense blue colour, according to the proportions in which it combines with this principle. Starch is employed as an emollient, in decoction, in the dose of from ʒij. to ʒiv. to ℔j. of water. The English pharmacopœiæ give the formula for a mucilage, *Mucilago amyli*, (starch, 3; water, 128;) which is commonly used as an enema.

Wheat and Rye Flour contain, besides a great quantity of starch, a good deal of gluten, and a gummous and saccharine substance. The flour of these grains possesses emollient properties, and is sometimes employed in decoction in inflammatory diseases. They are more frequently used as excipient of other remedies, and externally in the form of cataplasms. The crumb of wheat bread is used for preparing the *white decoction*, P. (crumb of bread, 3; calcined hartshorn and cinnamon water, āā. 1; sugar, 4; orange-flower water, 2; water, 128;) which is given principally in dysentery and diarrhœa. Slightly toasted, and infused in water, it forms a drink, *Panado*, moderately nourishing, and of an agreeable taste, employed principally in febrile diseases. Finally, by boiling it in water or milk, it forms excellent emollient poultices, but they are subject to become sour in a short time.

Bran. *Fur*. The husks of corn, separated from the seed, and reduced to small scales by the action of the mill-stone, still retains a sufficient quantity of starch, and is very useful for preparing lotions, injections, and emollient poultices.

Salep, *Radix salep*, is the bulb of the *Orchis mascula*, Lin., a plant growing in woods and pastures. This substance, such as it is imported from Turkey, is in small ovoid bulbs, commonly strung together, of a yellowish-gray colour, semitransparent, hard, horny, of a slightly aromatic smell, of a mucilaginous and somewhat salt taste. These bulbs are, according to Caventou, entirely formed of a substance which presents many of the characters both of bassorin and starch; they dissolve in boiling water, and form a jelly similar to starch, which turns blue with iodine.

Sago, *Fecula sagu*, is a fecula extracted from the pith of the *Sagus farinaria*, Rumph. a tree belonging to the family *Palmæ*, growing abundantly in some parts of the East Indies, and principally in the Molucca Islands. The best, however, comes from the northern coast of Sumatra. Sago is in small grains, irregularly round, of a reddish-gray colour, semitransparent, hard, elastic, and very difficult to pulverize, inodorous, and of a sweetish taste. It becomes soft and swells considerably in boiling water, but it retains its form, and becomes a jelly only when it has previously been pulverized. It is the least soluble of the feculæ in boiling water.

Tapioca, or White Sago, *Fecula tapioka*, is obtained from the root of the *Jatropha manihot*, Lin. a shrub of the family *Euphorbiaceæ*, a native of South America. This fecula is white, in irregular grains of a variable size, hard, and of a sweet taste. It forms easily a jelly by the action of boiling water.

Arrow Root. A fecula furnished by the root of the *Maranta indica* and *M. arundinacea*, plants belonging to the family *Amomeæ*, native of the East Indies, and now cultivated in the West India Islands. This substance is pulverulent, and differs from starch only by its being finer and more smooth to the touch, and giving less consistence to boiling water, which appears to arise from its containing more water in its composition.

Finally, the Potato Fecula, *Fecula solani tuberosi*, which is abundantly furnished by the tubers of the *Solanum tuberosum*, Lin. a plant of the family *Solaneæ*, a native of South America, and cultivated almost in every country. This substance is of a shining white, and resembles starch perfectly, except that it is in coarser powder. The fecula of potato, as well as all the others we have described above, is endowed with emollient properties, and is frequently employed as a light aliment of an easy digestion, in convalescence, and in all instances in which it is neces-

sary to nourish the patient without fatiguing the digestive organs.*

Prunes, *Pruni domesticæ fructus*, fruit, dried in an oven or in the sun, of the *Prunus domestica*, Lin. a tree of the family *Rosaceæ*, containing an acidulous and saccharine pulp, which possesses emollient and temperant properties. They are frequently administered in decoction, edulcorated with sugar, and this prepared pulp enters into the composition of several officinal prepations. The preserves made with the damask plum, are more acid and act as a laxative. Their decoction is employed as a purgative for children, and as an excipient for other purgative medicines.

Raisins, *Uvæ passæ*, fruit, dried in the sun, of the *Vitis vinifera*, Lin. (see page 294,) of which three different kinds are found in commerce, viz. case raisins, those of Corinth, and those of Damascus; Figs, *Caricæ pingues*, fruit of the *Ficus carica*, Lin. of the family *Urticeæ;* Dates, *Fructus dactylus*, preserved fruit of the *Phœnix dactylifera*, Lin. of the family *Palmæ*; and the Jujubs, *Fructus jujuba*, dried fruit of the *Rhamnus zizi-phus*, of the family *Rhamneæ*, are commonly designated collectively by the name of *pectoral fruits*. All these substances, which contain a good deal of mucilage and saccharine matter, called *grape sugar*, united with a small quantity of acid, possess some emollient and slightly nutritive properties. They are generally used in decoction in inflammatory affections of the organs of respiration. Figs, boiled in milk, are very advantageous in gargles and cataplasms, in anginæ and inflammations of the mouth.

* [According to the latest experiments of Mr. Guibourt, the fecula of potato, when well prepared, is insoluble in cold water; but when levigated upon a porphyry stone, it loses its whiteness, and the shining appearance of its particles. If it be now moistened with water, it forms a tenacious paste, and, if beaten in a mortar, it gives a mucilage analogous to that of tragacanth.

Mr. Guibourt supposes, that all the feculæ are formed of granules, consisting of insoluble envelopes, containing a soluble matter. The latter, freed from the envelopes by filtration, retains the property of striking a blue colour with iodine, and it is not gum, as Mr. Raspail supposes. Mr. G. afterwards ascertained, that the envelopes and the soluble part of the granules of starch differ chemically but little from each other. Both portions are rendered blue by iodine, and are precipitated by galls and metallic solutions. The envelopes are dissolved by ebullition in water, and appear not to differ from the substance in the interior of the granules, except that their texture is more dense.

As starch is thus proved capable of being rendered soluble by simple trituration, it will soon come to be employed in place of gum. This method alters the fecula less than torrefaction, which has heretofore been employed to effect the change into gum.—*North American Medical and Surgical Journal*, 1829.]

The seeds of the Bottle Gourd, *Cucurbita lagenaria*, Lin. of the Pompion, *Cucurbita pepo*, Lin. of the Melon, *Cucumis melo*, Lin. of the Cucumber, *Cucumis sativus*, Lin. plants belonging to the family *Cucurbitaceæ*, formerly known by the name of *Semina frigida majora*, contain a fixed oil and a good deal of mucilage. They act as an emollient, and may be used, after having been freed from their envelope, for emulsions. They were formerly in great repute, but are now almost discarded on account of the facility with which they become rancid. The same might be said of the seed of Hemp, *Cannabis sativa*, Lin. of the family *Urticeæ*, which was very frequently employed in emulsion or infusion, in inflammatory diseases of the urinary passages.

Finally, several other plants containing a great quantity of mucilage, are also employed as emollient, such are the Quince Seeds, *Pyrus cydonia*, Lin. of the family *Rosaceæ;* the Psyllium Seeds, *Plantago psyllium*, Lin. of the family *Plantagineæ*; the Groundsel, *Senecio vulgaris*, Lin. of the family *Synanthereæ*; the Brank Ursine, *Acanthus mollis*, Lin. of the family *Acantheæ*; the Bulb of the White Lilly, *Lilium candidum*, Lin. the Leek, *Allium porrum*, Lin. of the family *Liliaceæ*, &c.

Demulcent Animal Substances.

Milk. *Lac.* A peculiar liquid secreted, in mammiferous animals, by peculiar glands called the *mammary glands*, and intended for the purpose of nourishing animals whilst young.

P. P. Milk, generally considered, is white, opaque, heavier than water, of a sweet, peculiar, and variable taste, according to the species of animal from which it is obtained.

C. P. It is composed of water, curd, sugar of milk, a fatty matter, different salts, and a small quantity of acid; the whole is indeed, in very variable proportions. When allowed to stand for some time, it separates by degrees into three parts; the first, which forms the superior part, is called *cream*, and is white, opaque, soft, and unctuous; it is composed of butter united with a certain quantity of curd and serum; the second, equally white and opaque, but without unctuosity, is formed of the curd; finally, the third, which is liquid, transparent, of a slight green colour, of a sweetish and sub-acid taste, constitutes the *serum* or *whey*. It is itself composed of water, sugar of milk, and a small quantity of curd. Milk may be mixed in all proportions with water. Tolerably strong acids and alcohol coagulate it; the alkalies, on the contrary, redissolve the curd.

Cow's milk is the most commonly used; the goats' and asses' milk are also very frequently employed. These liquids are at the same time nourishing and emollient. They are administered as such in the treatment of diseases of the lungs and in certain cutaneous affections. The milk diet is often advantageous in phthisis pulmonalis, and in organic alterations of the stomach and other organs. Milk is also employed as an emollient topical application in phlegmasiæ of the skin, hæmorrhoids, angina, &c.

Whey. *Serum lactis*, which is prepared by pouring into milk a certain quantity of vinegar and boiling it, is frequently used as a demulcent and a refrigerant in inflammatory diseases in general, especially in those of the digestive organs. It serves also as a vehicle for administering more active remedies.

Isinglass, *Ichthyocolla*, is a substance prepared, principally in Russia, from the internal membrane of the *Vesicula natatoria* of the Large Sturgeon, *Acipenser huso*, a very large fish of the order *Chondropterigienses*, and from some other fishes; it is found in commerce in three different states: rolled up and forming twists of a small size, contorted in the shape of a lyre; in larger twists, heart-shaped; or finally, in thin and square sheets. It is white, semitransparent, inodorous and insipid. Infused in cold water, it swells up, becomes soft and *opalized.* It dissolves in boiling water, leaving hardly any residue; and on cooling, it forms a thick and shaking jelly, having a slight opal colour. Isinglass is almost entirely composed of gelatin. (See page 427.) It is frequently employed to prepare light nutritive jellies, of an easy digestion, very useful in the convalescence of protracted diseases, &c. It is commonly used for clarifying turbid liquors.

Glue. *Taurocolla.* Gelatin extracted from the feet, ears, &c., of oxen, calves and horses, is found in the shops in the form of dry and square pieces, brittle, semitransparent, of a variable colour, from light yellow to reddish-brown. It is employed for preparing gelatinous baths, the use of which is now very frequent and often beneficial as an emollient.

The meat of young animals in general, especially of the calf, lamb, chicken, and that of some animals of an inferior class, such as bull-frogs, the vine-snail, turtle, viper, cray-fish, &c., contain a large quantity of gelatin which imparts to them emollient properties. By boiling for several hours in water a certain quantity of these animal substances, we obtain emollient and slightly nutritive drinks, designed by the name of *medicinal broths*, (see page 53,) which are frequently administered with advantage

in most inflammatory affections. The most commonly used are those of veal and chicken.

Lard. *Axungia* seu *Adeps suilli*, is the melted and purified fat of pork, *Sus scrofa*, Lin., a mammiferous animal of the tribe *Pachydermes*. It is very white, solid, below 27° Centig. (72° Fahr.) granulated, smooth, and melting under the fingers, of a faint smell, of a sweet and agreeable taste, but becoming rancid in a short time. Its composition does not differ from fatty animal matters in general, (see page 426.) This substance acts on the economy like the sweet fixed oils, and is much employed as excipient of almost all the salves, and constituting one of the principles of ointments and plasters.

Butter. *Butyrum*, is contained in the cream of milk, and is used as emollient to dress blisters, or inflamed wounds, and enters as excipient into sundry salves.

Suet. *Sebum ovilli*, is the fat of the sheep, *Ovis aries*, a *mammiferous animal of the class Ruminantes*, it is white, solid, of a peculiar taste and smell. It is used only in the preparation of certain ointments and plasters.

Wax, *Cera*, a peculiar matter secreted by the bee, and with which this insect forms the honeycombs. It is found in commerce in circular pieces of variable sizes, of a yellow colour, of a slightly aromatic taste, and of the specific gravity of about 0.96. But as this wax is not pure, and its colour and smell are owing to the presence of extraneous bodies, it is purified and freed of its colouring matter by different processes; it is then called *white wax*. In this state it is white, solid, brittle, almost insipid and inodorous; it becomes soft when heated, and melts at 70° Centig. (158° Fahr.) It is decomposed by a higher degree of heat. It is insoluble in water; dissolves in all proportions in the fixed oils, and in essential oils by the assistance of heat, &c. This substance, which was formerly administered internally as an emollient suspended in an emulsion, enters into the composition of almost every ointment and plaster; and we give the name of *cerate* to the mixture of oil and wax so frequently used in surgery.

Finally, Spermaceti, *Sperma ceti*, is a peculiar fatty matter, existing abundantly in solution in the oil surrounding the brain of the spermaceti whale, *Physeter* seu *Catadon macrocephalus*. This substance when pure is in translucid and white masses,

shining, pearly, unctuous, and slightly flexible, of a crystalline structure, inodorous, insipid; specific gravity 0.943. It melts easily at 44° Centig. (107° Fahr.) At a higher temperature a portion volatilizes, and the other is decomposed. Insoluble in water, it dissolves in fixed and volatile oils, in alcohol and ether. The properties of spermaceti are very nearly the same as those of white wax. It is occasionally employed internally, suspended in a julep by means of the yolk of eggs, as a demulcent, to alleviate cough, and enters into the composition of several plasters and ointments; it is the base of the *Ceratum cetacei*, L. (Spermaceti, ℥ss.; white wax, ℥ij.; olive oil, f. ℥iv.)

CHAPTER XIV.

ANTHELMINTIC OR VERMIFUGE REMEDIES.

Anthelmintic, (αντι, against, and ελμινς, worm,) or *Vermifuge remedies*, are those which have the property of killing worms, or of causing them to be evacuated from the stomach and intestines. These effects are frequently produced by drastic purgatives, and several other substances acting very powerfully upon the animal economy, such as camphor, oil of turpentine, several energetic tonics, or astringents, &c.; but some of these substances, without exercising a determinate action on the general economy, seem, however, to be deleterious to the worms existing in the digestive canal. Having already spoken of the former, we will now confine ourselves to describe the latter. The number of anthelmintics, properly so called, is very limited; they are furnished by the vegetable and mineral kingdoms. We can say nothing at present of their general action, except that in most cases they are administered internally, and that their exhibition is generally followed by a purgative medicine, in order to facilitate the expulsion of the worms.

Family Algæ.

Corsican Worm-weed. *Helminthochorton, Fucus helminthochortos,* Lin. A marine plant, growing on the coast of the Mediterranean, and especially of the Island of Corsica. P. U. The whole plant.

B. C. Stems slender and cylindrical, terminated by small crooked branches, upon the lateral parts of which are sessile tuberculæ, containing the organs of fructification.

P. P. This plant is of a cartilaginous consistence; of a dull and reddish-brown colour; has a bitter, salt, and nauseous taste, and its odour is rather pleasant. It is found in the form of thick tufts, composed of numerous filaments, united at the base, in bundles intermingled together, fastened to each other by small hooks with which the stems are furnished. It is always found in commerce mixed with different species of filamentous sea-weeds, &c.

C. P. According to Mr. Bouvier's analysis, it is composed of gelatin, 602; vegetable fibre, 110; sulphate of lime, 112; muriate of soda, 92; carbonate of lime, 75; iron, manganese, and silica, united with phosphate of soda, 17. They also contain iodine, as is the case with almost all the sea-weeds. Water dissolves its active principles.

Th. E. The influence exercised by this substance upon the economy, is hardly appreciable; however, it may produce a slight irritation of the digestive canal; but it acts very powerfully on the intestinal worms. It is principally exhibited to children, and for the expulsion of lumbricoid worms. Its employment is attended with most beneficial effects in this troublesome disease of children.*

D. & M. of Adm. Powder, gr. x. to ʒij., mixed with honey, &c. Infusion, ʒj. to ʒj., in a cupful of water or milk.——*Jelly of Corsican moss*, P. (Helminthochorton, 16; isinglass, 1; white wine, 64; sugar, 96; water, 256.) Dose, ʒj. and above.——*Corsican worm-weed mixture*, Paris H. (Corsican worm-weed, ʒj.; simple syrup, ʒj.; boiling water, ʒiv.) Dose, a table-spoonful at once.

Family Filices.

Male Fern. *Filicis maris radix. Polypodium filix mas*, Lin. *Nephrodium filix mas*, Rich. *Aspidium filix mas*, Smith. *Polystichum filix mas*, Lamarck et De Candolle. A perennial herbaceous plant, growing abundantly throughout Europe, in shady places. P. U. The root and unexpanded buds.

B. C. Root or stump subterraneous, horizontal; leaves large, petiolate, oval, pinnate, pinnulæ close to each other, very long and pinnatified; petioles short, of a deep brown colour, and furnished with scales; fructifications reniform and rounded.

P. P. The root of this plant is of the size of the thumb, knotty, brown, and scaly externally, whitish internally, from six to eight inches long, of a disagreeable smell, and of a bitter and harsh taste.

C. P. According to M. Morin's analysis, this root contains a volatile oil, a fatty matter, some uncrystallizable sugar, gallic acid, tannin, starch, &c. Mr. Peschier, an apothecary of Geneva, by digesting some buds of male fern in sulphuric ether, obtained an ethereal tincture of an oily consistence, containing a peculiar matter resembling adipocire, which appears to be the anthelmintic principle of this plant.

Th. E. The male fern root has but a very indifferent action on the animal economy, but it appears to be deleterious to intestinal worms. Indeed, it is employed with success for destroying *lumbrici*, *trichocephales*, and *teniæ*. Dr. Peschier, brother to the above-mentioned pharmaceutist, asserts having exhibited, with a constant success, the ethereal tincture of the fern buds in the treatment of tenia. He mentions one hundred and fifty instances of cures during the course of nine months, and he is con-

* [We believe this marine plant to be the best vermifuge with which we are acquainted. We witnessed, in *Corsica*, the most astonishing effects from this remedy, and it is almost exclusively employed as a vermifuge in Italy, France, and generally on the continent of Europe.]—Am. Eds.

fident that properly administered, this substance does not fatigue the patient.

D. & M. of Adm. Powder, ʒij. to ʒiij.; two hours after its administration, a purgative is given in order to procure the expulsion of the worms.——*Ethereal tincture of fern buds*, Peschier. Dose, from gut. viij. to xxx. mixed with an extractive substance, q. s. to form as many pills as there are drops of this tincture.

Family Synantherеæ.

Semen-contra. European worm-seed. *Semen-contra vermes. Artemisia judaica*, Lin A shrub growing in Arabia and in the north of Africa. P. U. The seeds, top of the flower-stalks, and superior ramifications.

B. C. Stem ramose, pubescent, of an ash-gray colour, from one to two feet high; leaves small, tomentose; flowers yellowish, small, and in dense panicles; receptacle, naked and thin; fruit without pappus.

P. P. We distinguish two sorts of semen-contra in commerce; the one from the *Levant*, the other from *Barbary;* that from the *Levant* is greenish, composed of oblong capitulæ, entire or broken, formed of imbricated scales, covering ovoid and flattened seeds of a yellow colour, and mixed with broken peduncles. Its smell is strong and aromatic, and its taste very bitter. That from *Barbary* is composed of whitish buds, not developed, and of fragments of leaves and peduncles; its taste is acrid, and its odour strong and unpleasant.

C. P. This substance, as well as all the plants of this genus, contains a gummo-resinous bitter principle and an essential oil.

Th. E. It is considered as a very energetic vermifuge, and principally employed to expel from the digestive canal *Lumbrici* and *Ascarides vermiculares.*

D. & M. of Adm. Powder, gr. xx. to ʒij., mixed with honey, &c. Infusion, from ʒij. to ʒiij., in water, wine, or milk.——*Vermifuge powder*, P. (Semen-contra, helminthochorton, wormwood, tansy, scordium, senna and rhubarb, āā. e. p.) Dose, from ʒss. to ʒj.——*Vermifuge bolus*, Paris H. (Semen-contra, gr. viij.; calomel, gr. ij.; camphor, gr. vj.; syrup, q. s. for one bolus.) Dose, from No. j. to ij. and more if necessary, a day.

Family Gentianeæ.

[Pink Root. Indian or Carolina Pink Root. *Spigelia marylandica*, Lin. A perennial herbaceous plant, growing in the southern states, and peculiar to North America. P. U. The roots and leaves, but the former especially.

B. C. Stems numerous, from one to two feet high, four-sided, smooth, and of a purplish colour; leaves few, sessile, opposite, ovate and acuminate; flowers on a unilateral spike, leaning towards one side, and composed of from four to twelve flowers; calix five-parted; corolla funnel-shape, contracted at top, with five acute segments of a beautiful carmine colour externally, except towards the base, where it is blended with white, of an orange colour inside; anthers convergent; capsule didymous, two-celled, four-valved, containing many seeds.

P. P. Root consisting of a great number of slender and blackish fibres, forming together a large bunch. They are sent from the south in bundles of twenty to twenty-five inches long, together with the stems furnished with their leaves. Their taste is bland and somewhat nauseous.

C. P. It contains a large quantity of mucilage, but it does not appear to contain resin.

Th. E. The properties of this root are satisfactorily ascertained by the daily exhibition made of them as an anthelmintic, especially for the expulsion of lumbrici. It is, in this country, the most popular medicine for this object. It is stated to be much more active in its recent state, than when old. It is, however, a powerful medicine, inducing in large doses all the effects of narcotic substances. Dr. H. Thompson found it to produce acceleration of the pulse, flushed face, drowsiness, and a sensation of stiffness of the eyelids. Dr. Eberle mentions a case where a strong decoction of the root, administered to a child of six years old, occasioned a complete mental derangement of the same nature as that which is sometimes produced by the seeds of stramonium. These symptoms went off in the course of twenty-four hours, and left him quite as well as he had been before he took the pink root. Professor Chapman thinks it is probable, that it is, by virtue of this very property, it proves so destructive to the worms. Besides its vermifuge property, the pink root has proved occasionally very efficacious in intermittent fevers.

D. & M. of Adm. In powder, from 10 to 15 grains, and even more. Decoction, from ℥ss. to. ℥j. in a pint of water, given by wine-glassfuls every 2 or 3 hours; but it is generally combined with senna leaves in order to procure the expulsion of worms as soon as they have been destroyed or weakened by the vermifuge. Some physicians give the spigelia by itself and purge immediately after with calomel or any other cathartic; in this way, it prevents the nervous symptoms, and seldom fails to bring away worms when they are present.]

Family Chenopodeæ.

[Wormseed. Jerusalem Oak. *Chenopodium anthelminticum*, Lin. An herbaceous plant, growing all over America, from Canada to Brazil, in old fields, gravel, rubbish, &c. P. U. The seed and leaves.

B. C. Stem branched, upright, from two to five feet high; leaves sessile, alternate, attenuated at both ends, margin sinuate by large, unequal, obtuse teeth; flowers very small, numerous, and yellowish-green; calix, or simple perigone, with five short, oval segments; style bifid or trifid, longer than the stamina; seeds lenticular, flat, shining, crowned by the persistent calix.

P. P. The whole plant possesses a strong and lasting smell, a bitter, acrid, and aromatic taste.

C. P The seed principally contains a large quantity of essen-

tial volatile oil, very penetrating and pungent, in which resides the medicinal properties.

Th. E. It is a very active and certain vermifuge, extensively used throughout this country. The expressed juice is given in the dose of a table-spoonful for a child two or three years old, and is repeated two or three times a day. The infusion of a handful of the leaves and seeds to a quart of milk, is administered by a wine-glassful at once, three times a day. Pulverized seeds, a tea-spoonful in syrup or molasses, morning and night.

The essential oil has become the most usual form in which this medicine is now administered; it is given in the dose of from two to eight drops to children under two years old; from eight to twelve, to others under six years; and as much as twenty or thirty to adults. A great advantage this medicine has over most of its kindred articles is, that it is an excellent tonic, well suited to the case of weak stomach and impaired digestion, which so often attends worms or the simulated affections. We have prepared with the oil a syrup, which has the advantage of acting at the same time as a gentle cathartic; it has invariably been administered with great success and facility. (Oil of wormseed, 1; simple syrup of rhubarb, 32; tincture of jalap, 2.) Dose, from a tea-spoonful to a table-spoonful, repeated every two hours until it operates.]

Family Meliaceæ.

[Pride of China. *Melia azedarach*, Lin. A tree native of India, and now almost naturalized in our southern states. P. U. The bark of the root and berries.

B. C. A tree of moderate size, with bi-pinnate and alternate leaves, and forming bunches towards the summit of the branches; leaflets smooth, ovate, and dentate; flowers odorous, somewhat similar to jessamine; calix small, five-parted; petals five; nectary cylindrical, ten-toothed; orifice internally antheriferous; style cylindric; stigma five-rayed; fruit, a globose drupe; nut five-celled, five-seeded.

Th. E. The fresh bark of the root of this tree is a very active vermifuge medicine, and as such has become the most popular article among the inhabitants of the southern states. Dr. L. Kollock, vice president of the Georgia Medical Society, speaks of it as a most efficacious anthelmintic. It is indeed considered by many respectable practitioners of that section of the country, as decidedly superior to all other medicines in lumbricoides or other species of worms. It is said to produce, in the months of March and April, while the sap is mounting into the tree, stupor, dilatation of the pupil, stertorous breathing, &c.; but these symptoms, like those sometimes produced by the spigelia, pass off

without perceptible injury to the economy. It has proved a useful febrifuge in those affections usually denominated verminous fevers. The berries are also exhibited with effect, and children are suffered to eat them without any particular regard; and it is stated by some, that they are quite as efficacious as the bark of the root. The pulp of the fruit made into an ointment with lard, has been employed with success in tænia capitis.

D. & M. of Adm. Decoction, a large handful of the fresh bark boiled in a quart of water until reduced to about a pint, of which from half an ounce to one ounce may be given every two or three hours until it operates; exhibited in this manner its operation is powerful, sometimes producing both vomiting and purging.]

Family Leguminosæ.

[Cowhage. *Dolichos pruriens*, Lin. *Stizolobium pruriens*, Persoon. A sarmentose plant, growing in the East and West Indies and in South America. P. U. The spiculæ or hair of the pods.

B. C. Stem sarmentose, climbing; leaves ternate, on long footstalks; flowers racemose and axillary, of a yellowish colour, spotted with purple; pods about four inches long, thickly covered with short and stiff brown hairs, which, when applied to the skin, occasion an intolerable itching.

Th. E. The operation of this article seems to be merely mechanical. It has been found particularly useful in expelling the round worm, *Lumbricus teres;* the spiculæ irritating and aiding its expulsion, by wounding it, without affecting the intestines. It is prepared by dipping the pods in syrup or molasses, and then, with a knife, scraping off the hairs along with the syrup, until it forms a mixture of the thickness of honey, which is given in doses of a tea-spoonful to a table-spoonful in the morning, then followed by a brisk cathartic. However, it is advised before exhibiting it, to prepare the patient by a gentle purgative, as its efficacy is generally much increased by this practice, probably by exposing the worms more to the action of this substance.]

[Cabbage-tree Bark. *Geoffroya inermis*, Lin. A tree, native of Jamaica, growing in low savannahs. P. U. The bark.

B. C. Trunk elevated, branching at top; leaves pinnate, composed of four or five pairs of lanceolate, pointed, and smooth folioles, in pairs, with a terminal one; flowers in clusters, of a pale-rose colour; germ oval, with a curved, tapering style, and hooked stigma; fruit resembling a small plum, pulpy, marked on each side with a longitudinal furrow, and containing a hard seed.

P. P. Bark gray externally, black internally, furrowed, and pulverulent, affording a powder resembling that of jalap. Its taste is unpleasant, sweetish, and mucilaginous.

C. P. Its soluble component parts seem to be chiefly mucus, resin, extractive, saccharine matter, and a narcotic principle.

Th. E. This bark is a powerful anthelmintic, particularly useful in expelling lumbrici. It may be given in the form of powder, decoction, extract, and syrup. It operates as a cathartic, but sometimes also as a narcotic, and requires, therefore, to be given at first in small doses, which may be gradually increased till nausea is excited. In large doses it is apt to occasion sickness, vomiting, fever, and delirium; and the same effects are produced if cold water be drunk during its operation. When such symptoms occur from either cause, they are generally removed by copious draughts of warm water, a dose of castor oil, and followed with a plentiful dilution of lemonade, or an infusion of tamarinds.

D. &. M. of Adm. Powder, from ℈j. to ʒss.——*Extract*, gr. ij. to gr. iv.——*Decoctum Geoffræ inermis*, E. (Cabbage-tree bark, ʒj.; water, Ibij.; boil with a gentle heat down to Ibj.) Doses, for children, f.ʒij. to ʒij.——*Syrup*, (Decoction, 1 part; sugar, 2 parts.) Dose, from 1 to 4 table-spoonfuls.]

[The Virginia Goat's Rue. *Galega virginiana*, Lin. *Thephrosia virginiana*, Persoon. A beautiful native plant, about one foot high, with rose-coloured and yellowish-white flowers, growing in sandy and dry woods, and common in many parts of Pennsylvania and New Jersey, is said to possess powerful anthelmintic properties, and is commonly administered in the form of a decoction. This plant is called cat-gut in Jersey, from the resemblance of its roots to that article.]

[Ground Pink root. *Silene virginica*, Lin. A native plant, belonging to the family *Caryophylleæ*, and abundant in many parts of the United States, has been used with advantage in the form of decoction in diseases of worms.]

Samphire, or Sea Fennel. *Crithmum maratimum*, Lin. An annual plant, of the family *Umbelliferæ*, growing on the rocks along the sea shore. It possesses a strong smell, and an aromatic, sharp, and salt taste. According to Mr. Lavini, this plant contains a volatile oil, very light and fluid, of a straw colour, of a very acrid taste, and of a smell approaching that of petroleum, some salts with base of lime and potassa, free acetic acid, &c. He attributes to this plant, which was formerly employed as a powerful diuretic, the property of expelling the lumbrici from the stomach and intestines, by vomiting and purging the patient. In this view he recommends the expressed juice of the leaves, or the essential oil mixed with sugar, in the form of oleo-

saccharate; he thinks it may also act efficaciously, by applying to the epigastrium a cataplasm of the bruised leaves.

Garlic. *Allium sativum*, Lin. A plant of the family *Liliaceæ*, native of Italy, and cultivated almost every where, of the size of a large walnut, composed of several small bulbs, covered with a thin, dry, and whitish coat. Its strong and disagreeable odour, as well as its taste, are generally known. It contains a very acrid, heavy, and yellow volatile oil, albumen, sulphur, a saccharine matter, and fecula. The above acrid oil imparts to garlic a very energetic property, which irritates to such a degree, that when bruised and applied to the skin it acts as a rubefacient, and may occasion ulcerations difficult to cure. Administered internally, either raw, or boiled in water or milk, garlic acts as an anthelmintic, and is frequently resorted to, principally as a domestic remedy.

[It has been successfully given in intermittents, and in typhoid fevers. If the body be kept warm during its use, it acts powerfully by producing a plentiful diaphoresis. A poultice made of it is a good resolvent in indolent tumours; a clove of it, wrapped in cotton or gauze, or a few drops of the juice introduced into the external ear, is said to be extremely efficacious in atonic deafness; and applied to the pubes as a poultice, in retention of urine owing to a want of action in the bladder, it is sometimes effectual in stimulating that viscus to discharge its contents. The juice is also applied, united with oil, to herpetic eruptions.

D. & M. of Adm. In substance, from ʒss. to ʒij. or from 1 to 6 cloves, swallowed whole, twice or thrice a day; in pills, united with soap, or calomel, from gr. xv. to ℈j. Juice, f.ʒss. in any proper vehicle.——*Syrupus allii*, U. S., D. (Garlic bulb, sliced, ℔j.; boiling water, Oij.; sugar, q. s.)——*Vinegar of garlic.* (Recent bulb of garlic, ʒvj.; distilled vinegar, Oiij.; proof spirit, f.ʒiv.)——*Syrup of garlic*, (Vinegar of garlic, Oij.; refined sugar, ℔iijss.)]*

Mineral Vermifuge Substances.

Tin. *Stannum.* A metal found in nature in the state of oxide or of sulphuret, in Germany, England, France, &c.

P. P. The metallic tin is solid, maleable, of a white colour, when it is bent, we hear a peculiar noise called the crackling of tin, it acquires a slight and disagreeable odour by friction, and its specific gravity is 7.299.

* [The two last preparations have been recommended by Mr. D. B. Smith, in the Journal of the Philadelphia College of Pharmacy, as proper substitutes for the syrup of garlic of the United States and Dublin Pharmacopœiæ. The acetic acid seems, in fact, to be the proper solvent of the acrid principle of garlic, and the syrup prepared from this vinegar has a stronger flavour of garlic, and is less offensive, in proportion to its strength, than when made with water, and does neither mould nor injure by keeping.]—Am. Eds.

C. P. This metal melts at 228° Centig. (442° Fahr.) powerfully heated, it blazes, burns, and is converted into an oxide; with a gentle heat and in contact with the air, it acquires a pellicle exhibiting the colours of the rainbow, and formed of oxide of tin and metallic tin. Concentrated nitric acid acts very powerfully upon this metal, and converts it into the state of oxide; hydrochloric acid dissolves it easily, especially with the assistance of heat; finally, it forms with sulphur two combinations, one of which is the *Aurum mussivum*.

Th. E. The powder of this metal has been commended in the treatment of several diseases, but it seems to be really useful only as an anthelmintic.

D. & M. of Adm. Powder or filings, ℥ss to ℥j. incorporated with honey or syrup.——*Pulvis stanni*, R. (Pure tin, 2; prepared chalk, 1.) Dose, from gr. xx. to xl.——*Anthelmintic electuary*, Paris H. (Tin, ℥j.; extracts of mugwort and jalap, āā. ℥j.; compound syrup of succory, q. s. for 12 doses.) Dose, No. j. every half hour.

Naphtha is a substance, the origin of which is not perfectly known. It is the most fluid of several varieties of bitumen, supposed to be the product of the putrid fermentation of mineral coal! It is found abundantly, at a certain depth, on the shores of the Caspian Sea, in Calabria, &c.

It is a transparent liquid, white or slightly yellowish, of the specific gravity of 0.83, of a peculiar and disagreeable odour. It is very volatile, burns when it comes in contact with an ignited body. It is insoluble in water, and dissolves in alcohol, ether, and oils.

It is occasionally employed as an anthelmintic, in the dose of from ten drops to ℥j. and even more, mixed with ether in order to cover its disagreeable smell.

Petroleum, a mixture of naphtha and bitumen, is found in many countries; the United States possess several springs of it. It is liquid, unctuous, of a blackish-brown colour, almost opaque, of a strong and disagreeable smell, and of the specific gravity of 0.85. It has been used for the same purpose as the preceding article, but is almost discarded.

TABLE

OF THE

PRINCIPAL MEDICINAL PLANTS,

ARRANGED IN

THE ORDER OF THEIR NATURAL FAMILIES.

I. ACOTYLEDONOUS PLANTS.

Class First.

ACOTYLEDONIA.

(Plants whose germination of the seeds is not well known, and which are supposed not to have any cotyledons.)

ALGÆ.

Vegetation of a very simple organization, of an homogeneous structure, of very variable forms and consistence, growing most commonly in fresh or salt-water; fructifications consisting of *conceptacles* or *sporanges** resembling tubercle, dehiscent or not dehiscent, and placed on the outside of the plant or in the substance itself.

Corsican-Moss. *Fucus helminthochortos*, Lin.

FUNGI.

Terrestrial or parasitical plants of very variable consistence; but never of a green colour; sometimes in the form of tubercles, or in that of minute filaments, at others, and even more frequently in the shape of umbrells, &c. The organs of reproduction are in the form of dust, and placed internally or externally.

White Agaric. *Boletus laricis*, Lin.

LICHENEÆ.

Dry and coriaceous plants, generally membraniform, or dendroid, growing commonly upon trees or rocks; fructifications enclosed in receptacles resembling scutcheons or tubercles.

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* [The greater number of authors have substituted the names of *perispore*, *sporange* or *conceptacle* for that of *pericarp*, in order to designate, in a general manner, the organ which appears especially to be destined to the reproduction. By this new designation, they wish to point out the difference of organization existing between these two parts. The sporange envelopes the reproductory corpuscles which correspond with the seeds of the plants provided with sexual organs.]—Am. Eds.

Iceland moss. *Lichen islandicus*, Lin. *Physcia islandica*, De Cand.
Liver-wort. *Lichen pulmonarius*, Lin. *Lobaria pulmonaria*, De Cand.
Cup moss. *Lichen pyxidatus*, Lin.

FILICES.

Plants commonly herbaceous, with subterranean and perennial stems; leaves alternate, rolled up like a crosier before their expansion, simple, pinnatifid or decomposed. Organs of fructification consisting in sporules* contained in scaly capsules, situated under the leaves, or forming clusters, or terminal spikes.

Male fern. *Nephrodium filix mas*, Rich. *Polypodium filis mas*, Lin.
Polytricon. *Asplenium trichomanes*, Lin.
Black maidenhair. *Adianthum nigrum*, Lin.
Montpellier maidenhair. *Adianthum capillus veneris*, Lin.
Canada maidenhair. *Adianthum pedatum*, Lin.
Ceterach. *Ceterach officinarum*, Lin.
Flowering fern. *Osmunda spectabilis*, Pursh.

II. MONOCOTYLEDONOUS PLANTS.

(Plants whose embryo possesses one cotyledon or lobe.)

Class Second.

MONOHYPOGYNIA.

(Stamina fixed to the receptacle.)

PIPERITEÆ.

Stem herbaceous or woody, climbing, leaves simple, alternate, or opposite; flowers in axillary aments, without calix or corolla; generally two stamina, sometimes one, at others more than two; anthers one or two-celled; ovary simple; one or more stigmas; fruit a monospermous and undehiscent shell.

Black pepper. *Piper nigrum*, Lin.
Bettel. *Piper betel*, Lin.
Cubebs. *Piper cubeba*, Lin.
Long pepper. *Piper longum*, Lin.

AROIDEÆ.

Roots often tuberous; without stem; leaves vaginant; flowers hermaphrodite or unisexual; disposed on a *spadix* enveloped in a spathe; with or without a four-divided calix; stamina variable; ovary one or three-celled; stigma glandular; fruit monospermous or polyspermous berries.

Indian turnip. *Arum triphyllum*, Lin.

* [*Sporules*, *spores* or *seminules*, are names given to the seeds or the seminal powder of several acotyledonous plants; in the *filices* this powder is extremely fine and of various colours.]—Am. Eds.

Spotted Arum. *Arum maculatum*, Lin.
Swamp cabbage. *Symplocarpus fœtida*, Salisbury.
Calamus aromaticus. *Acorus calamus*, Lin.

CYPEROIDEÆ.

Stems or culms triangular, without nodes; leaves long, narrow, vaginant; flowers hermaphrodite or unisexual, frequently monoicous, in spikes or aments; a single shell instead of a calix; three stamina; ovary unilocular; five stigmas; fruit, *Achene*,* of variable form.

Long galangale. *Cyperus longus*, Lin.
Round galangale. *Cyperus rotundus*, Lin.
German sarsaparilla. *Carex arenaria*, Lin.

GRAMINEÆ.

Stem herbaceous, known by the name of *culm* or straw, cylindrical, fistular, with nodes; leaves long, narrow, alternate, vaginant; flowers in spikes or panicles; the hermaphrodite, sometimes unisexual, enveloped in scales, the external one of which, divided in two cells, is called *Lepicene* or external glume, and contains one or several flowers forming the spikelet; the internal scale is called *bale* or *internal glume*, and is often bivalved; one of the valves is commonly terminated by a filiform apex called *awn;* stamina generally three, sometimes more, at others less; stigma double, plumose; ovary simple, one style; fruit, a *cariopse*† or achene, with a farinaceous endosperm.

Oats. *Avena sativa*, Lin.
Dog-grass. *Triticum repens*, Lin.
Wheat. *Triticum sativum*, Lin.
Rye. *Secale cereale*, Lin.
Barley. *Hordeum vulgare*, Lin.
Provence reed. *Arundo donax*, Lin.
Broom reed. *Arundo phragmites*, Lin.
Sugar cane. *Saccharum officinarum*, Lin.
Rice. *Oriza sativa*, Lin.

Class Third.

MONOPERIGYNIA.

(Stamina fixed to the calix.)

PALMÆ.

Stem or stipe rising in a slender column, straight, cylindrical; leaves very large, forming a bunch at the top of the stem; flowers hermaphrodite or dioi-

* [*Achene* or *Acenium*, is a monospermous and indehiscent fruit, produced by an inferior ovary, the pericarp of which is more or less intimately soldered with the *tegumentum proprium* of the seed, and with the tube of the calix.]—Am. Eds.

† *Cariopse*, a monospermous and indehiscent fruit, produced by a superior ovary, the pericarp of which is very thin, and forming as it were, but one body with the *tegumentum proprium* of the seed.]—Am. Eds.

cous, very numerous, supported on common peduncles, and enclosed, before the expansion of the flowers in monophyllous or polyphyllous spathes; calix double and persistent, six-divided; six stamina; three ovaries, two of which are generally abortive; from one to three styles; one simple or trifid stigma; fruit very variable, according to the species.

Date tree. *Phœnix dactylifera*, Lin.
Sago tree. *Sagus farinaria*, Rumph.

ASPARAGINEÆ.

Stem commonly sarmentose and climbing, sometimes cylindrical, and crowned with a bunch of leaves similar to that of the *Palmæ;* leaves simple, petiolate, or sessile; opposite or alternate, and seldom verticillate; flowers hermaphrodite; calix petaloid, coloured, with from four to six *sepals** or divisions; four to six stamina; ovary not adherent, three-celled; style simple or trifid; stigma three-lobed; fruit, a globular berry, containing one or several seeds.

Sparrow-grass. *Asparagus officinalis*, Lin.
Sarsaparilla. *Smilax sarsaparilla*, Lin.
China root. *Smilax china*, Lin.
Butcher's broom. *Ruscus aculeatus*, Lin.

COLCHICEÆ.

Root often bulbiferous; stems herbaceous; leaves alternate, long, sheathing; flowers, perianth petaloid, six-divided, sometimes tubulated towards its base; six stamina, opposite to the divisions of the perianth; ovary simple, three-sided; style trifid; three stigmas; fruit, a trilocular and three-valved capsule, containing numerous seeds.

Meadow saffron. *Colchicum autumnale*, Lin.
Cevadilla. *Veratrum sabadilla*, Retz.
White hellebore. *Veratrum album*, Lin.
American hellebore. *Veratrum viridis*, Willd.

LILIACEÆ.

Root often bulbiferous; stem herbaceous; leaves alternate, sometimes verticillate, elongate, vaginant; flowers sometimes contained in a spathe, solitary, or paniculate, at others disposed in corymbs; calix coloured, with six sepals or divisions, soldered at their base; ovary three-celled; style simple, sometimes wanting; stigma three-lobed; fruit a trilocular and three-valved capsule, containing numerous seeds.

White lilly. *Lilium candidum*, Lin.
Garlic. *Allium sativum*, Lin.
Leek. *Allium porrum*, Lin.
Onion. *Allium cepa*, Lin.
Squill. *Scilla maritima*, Lin.

* [Sepal or foliole constituting the calix, which is monosepalous or polysepalous, according as it is formed of a single foliole or of several, cut into various forms. The words monosepalous and polysepalous are synonymous with monophyllous or polyphyllous, but are applied only to the calix.]—Am. Eds.

Spike aloes. *Aloe spicata*, Lin.
Perfoliate aloes. *Aloes perfoliata*, Lamarck.
Mealy star-grass. *Aletris farinosa*, Michaux.

IRIDEÆ.

Root bulbiferous or repent; scape naked or foliate; leaves sessile, vaginant, alternate, and compressed; flowers contained in a spathe; calix petaloid, tubular towards its base, with six irregular divisions; three free stamina, either distinct, or soldered by their filaments; style simple or trifid; stigma plane and petal-like; fruit, a three-celled and polyspermous capsule.

Yellow water flag. *Iris pseudo-acorus*, Lin.
Blue flag. *Iris versicolor*, Lin.
Florentine orris. *Iris florentina*, Lin.
German orris. *Iris germanica*, Lin.
Saffron. *Crocus sativus*, Lin.

Class Fourth.

MONOEPIGYNIA.

(Stamina soldered with the pistil.)

AMOMÆ.

Stems commonly herbaceous; root perennial and tuberculated; leaves simple, entire, vaginant, rolled up before their development; flowers solitary, in spikes or clusters, contained in spathes; calix coloured, tubular towards its base, with a double limb, the external one three-divided, as well as the internal one, the two superior divisions forming the superior lip, and the third, irregular and trilobed, constitutes the inferior one; one stamen, with a plane and petaloid filament; ovary three-celled; stigma concave; fruit a three-celled and three-valved capsule, sometimes a berry containing several seeds.

Cardamom. *Amomum cardamomum*, Lin.
Long zedoary. *Amomum zedoaria*, Willd.
Ginger. *Amomum zingiber*, Lin.
Round zedoary. *Kæmpferia rotunda*, Lin.
Galangal. *Kæmpferia galanga*, Lin.
Arrow root. *Maranta arundinacea*, Lin.

ORCHIDEÆ.

Root with two fleshy tubers, rounded or palmate; stem simple, herbaceous, sometimes climbing; radical leaves vaginant; cauline leaves sessile, alternate; flowers in a spike, seldom solitary; calix petaloid, with six divisions; the three external ones regular, the three internal of various forms; one stamen; ovary inferior; fruit a three-valved, unilocular, and polyspermous capsule.

Salep or Salop. *Orchis mascula*, Lin.
Vanilla. *Epidendrum vanilla*, Lin.

III. DICOTYLEDONOUS PLANTS.

§1. APETALOUS FLOWERS.

Class Fifth.

EPISTAMINIA.

(Stamina fixed on the pistil.)

ARISTOLOCHIÆ.

Perennial herbaceous plants, or sarmentose shrubs; leaves alternate; flowers axillary; calix monosepalous or irregular; with six or twelve stamina, free, or soldered together, style simple; stigma five-lobed; fruit, a capsule, most commonly composed of six polyspermous cells.

European asarabacca. *Asarum europæum*, Lin.
Canadian asarabacca. *Asarum canadense.*
Round aristolochia. *Aristolochia rotunda*, Lin.
Long aristolochia. *Aristolochia longa*, Lin.
Virginian snake root. *Serpentaria virginica*, Willd.
Hypocistus. *Citinus hypocistus*, Lin.

Class Sixth.

PERISTAMINIA.

(Stamina fixed on the calix.)

SANTALACEÆ.

Stems ligneous; leaves alternate, simple, sometimes very small; flowers small, solitary, or in spikes; perigone with four or five divisions; four or five stamina; ovary unilocular; style simple; stigma, lobed; fruit, a drupe containing a monospermous nut.

White sanders. *Santalum album*, Lin.

THYMELEÆ.

Stems ligneous, frutescent, ramose; leaves simple, generally alternate and frequently persistent; flowers hermaphrodite, solitary, terminal, or in axillary spikes; calix monosepalous, coloured, four or five-divided, eight and seldom ten stamina; ovary unilocular; style and stigma simple; fruit a monospermous *achene* or berry.

Garou. *Daphne gnidium*, Lin.
Mezereon. *Daphne mezereum*, Lin.
Laureola. *Daphne laureola*, Lin.
Leather wood. *Dirca palustris*, Willd.

LAURINEÆ.

Trees or shrubs of a fine appearance, aromatic; leaves alternate, tough, shining, often persistent; flowers umbellate or paniculate; calix monosepalous, six and seldom four-divided; stamina from six to nine and more; anthers bilocular;

ovary free and unilocular; fruit a drupe, the base of which is surrounded by the calix, and which contains a single seed.

Sweet bay-tree. *Laurus nobilis*, Lin.
Cinnamon tree. *Laurus cinnamomum*, Lin.
Sassafras. *Laurus sassafras*, Lin.
Camphor tree. *Laurus camphora*, Lin.
Cassia lignea tree. *Laurus cassia*, Lin.
Cullilawan tree. *Laurus culilaban*, Lin.

POLYGONEÆ.

Stems herbaceous, seldom sarmentose; leaves alternate, sheathing at their base; flowers small and greenish, in spikes or panicles; calix monosepalous, three, five or six-divided, often persistent, the bottom of which is formed by a perigynous disk;* stamina variable, never above fifteen; ovary free, monocelled; two or three sessile stigmas; fruit, a small achene, commonly triangular, with a farinaceous endosperm.

Officinal bistort. *Polygonum bistorta*, Lin.
Sorrel. *Rumex acetosa*, Lin.
Garden patience. *Rumex patientia*, Lin.
Palmate rhubarb. *Rheum palmatum*, Lin.
Waved-leaved rhubarb. *Rheum undulatum*. Lin.
Compact rhubarb. *Rheum compactum*, Lin.
Rhapontic. *Rheum rhaponticum*, Lin.

CHENOPODEÆ.

Stem herbaceous or frutescent, ramose; leaves alternate, deprived of stipules; flowers small, sometimes unisexual; calix monosepalous, persistent, with two or three deep divisions; from four to ten stamina; ovary free, unilocular; style bifid or quadrifid; from two to four stigmas; fruit membranous, compressed, indehiscent, seldom fleshy.

Jerusalem oak. *Chenopodium botrys*, Lin.
Wormseed. *Chenopodium anthelminticum*, Lin.
Mexican tea-plant. *Chenopodium ambrosioides*, Lin.
Stinking orach. *Chenopodium vulvaria*, Lin.
Salt-wort. *Solsola soda*, Lin.
Stinking ground-pine. *Camphorosma monspeliaca*, Lin.
American nightshade. *Phytolacca decandra*, Lin.

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Class Seventh.

HYPOSTAMINIA.

(Stamina fixed on the receptacle of the pistil.)

PLANTAGINEÆ.

Stems herbaceous, simple, or ramose; leaves either all radical or all cauline;

* [The disk is *perigynous* when the insertion of the stamina around the ovary is on the same horizontal plane with it.]—Am. Eds.

flowers in ovoid spikes; calix persistent, with four divisions; corolla tubular, four-lobed; four stamina; ovary free; stigma simple; fruit opening in two hemispherical valves with two polyspermous cells.

Broad-leaved plantain. *Plantago major*, Lin.
Branching plantain. *Plantago psyllium*, Lin.

PLUMBAGINEÆ.

Herbaceous plants or shrubs; leaves alternate, oval, radical, often vaginant; flowers spicate or capitate; calix persistent; corolla monopetalous, with four deep divisions; five stamina; ovary free; five styles, and five stigmas; fruit, a capsule enveloped by the calix, sometimes indehiscent and monospermous.

Tooth-wort. *Plumbago europæa*, Lin.
Marsh rosemary. *Statice caroliniensis*, Walter.

§ 2. MONOPETALOUS FLOWERS.

Class Eighth.

HYPOCOROLLIA.

(Corolla staminiferous, and fixed on the receptacle of the pistil.)

GLOBULARIÆ.

Flowers always capitate; calix monosepalous, four-divided; corolla monopetalous, regular, four or five-divided; stamina alternate with the lobes of the corolla; ovary free; one style; one stigma; fruit, an indehiscent and monospermous capsule.

French daisy. *Globularia alypum*, Lin.
Globularia vulgaris, Lin.

SCROPHULARIÆ.

Plants herbaceous, seldom ligneous; leaves alternate, or opposite; flowers in spikes; calix monosepalous, persistent, four or five-divided; corolla monopetalous, irregular; from two to four didynamous stamina; ovary simple; one style; one simple or bilobed stigma; fruit, a bilocular, bivalved and polyspermous capsule.

Officinal speedwell. *Veronica officinalis*, Lin.
Water pimpernel. *Veronica beccabunga*, Lin.
Germander-leaved speedwell. *Veronica chamædrys*, Lin.
Teucrium-leaved speedwell. *Veronica teucrium*, Lin.
Spiked speedwell. *Veronica spicata*, Lin.
Hedge-hyssop. *Gratiola officinalis*, Lin.
Eye-bright. *Euphrasia officinalis*, Lin.
Fox-glove. *Digitalis purpurea*, Lin.

ACANTHACEÆ.

Shrubs or herbaceous plants with opposite leaves; flowers axillary, solitary, or in terminal spikes; from two to three bractes to each flower; calix monosepalous, irregular, with four or five deep divisions; corolla monopetalous, irregular, often bilabiate; from two to four didynamous stamina; ovary supported

by a circular and hypogynous disc;* one style; one bi-lamellated stigma; fruit, a bilocular capsule containing two or more seeds, or a berry with from one to four small nuts.

Brank-ursine. *Acanthus mollis*, Lin.

JASMINEÆ.

Trees or shrubs with leaves opposite, simple or pinnate, with dots on their under surface; flowers hermaphrodite, or unisexual, in racemes or corymbs, of an agreeable odour; calix four or five-dentate; corolla monopetalous, regular, four or five-divided; two stamina; ovary free; style simple; stigma bifid; fruit, a bicelled capsule, each cell containing one or two seeds, or a berry containing from one to four small nuts.

European olive tree. *Olea europæa*, Lin.
Fragrant olive tree. *Olea fragrans*, Thunberg.
Lilac. *Syringa vulgaris*, Lin.
Common ash-tree. *Fraxinus excelsior*, Lin.
Flowering ash-tree. *Fraxinus ornus*, Lin.
Round-leaved ash-tree. *Fraxinus rotundifolia*, Lin.

LABIATÆ.

Stems herbaceous or sub-frutescent, square; leaves opposite, as well as the branches; flowers odorous, axillary or verticillate, solitary, or disposed in corymbs or spikes; calix monosepalous, tubular, with five divisions; corolla monopetalous, irregular, tubular, with two lips and five divisions; four stamina, two of which are shorter than the other; ovary simple, quadrilobed; style simple, stigma bifid; fruit, *tetrachene*, with four seeds.

Rosemary. *Rosmarinus officinalis*, Lin.
Garden sage. *Salvia officinalis*, Lin.
Meadow sage. *Salvia pratensis*, Lin.
Garden clari. *Salvia sclarea*, Lin.
Syrian herb mastich. *Teucrium marum*, Lin.
Common germander. *Teucrium chamædrys*, Lin.
Water germander. *Teucrium scordium*, Lin.
Ground pine. *Teucrium chamæpytis*, Lin.
French ground pine. *Teucrium iva*, Lin.
Peppermint. *Mentha piperita*, Lin.
Canadian mint. *Mentha canadensis*, Willd.
Garden mint. *Mentha gentilis*, Lin.
Curled mint. *Mentha crispa*, Lin.
Green or spear mint. *Mentha viridis*, Lin.
Pennyroyal. *Mentha pulegium*, Lin.
Hyssop. *Hyssopus officinalis*, Lin.
Summer savory. *Satureia hortensis*, Lin.
Nep or cat mint. *Nepeta cataria*, Lin.
True lavender. *Lavandula vera*, De Cand.

* [The disk is *hypogynous* when the insertion of the stamina takes place under or on the same level with, the base of the ovary.]—Am. Eds.

Common or spike lavender. *Lavandula spica*, Lin.
French lavender. *Lavandula stæchas*, Lin.
Ground ivy. *Glechoma hederacea*, Lin.
Dead nettle. *Lamium album*, Lin.
Officinal betony. *Betonica officinalis*, Lin.
Common horehound. *Marrubium vulgare*, Lin.
Stinking horehound. *Ballota nigra*, Lin.
Mother-wort. *Leonurus cardiaca*, Lin.
Common thyme. *Thymus vulgaris*, Lin.
Common calamint. *Thymus calamintha*, Lin.
Mother of thyme. *Thymus serpillum*, Lin.
Wild marjoram. *Origanum vulgare*, Lin.
Sweet marjoram. *Origanum Marjorana*, Lin.
Balm. *Melissa officinalis*, Lin.
Sweet Basil. *Ocymum basilicum*, Lin.
Self-heal. *Prunella vulgaris*, Lin.
Horsemint. *Monarda punctata*, Willd.
Dittany. *Cunilla mariana*, Willd.
American pennyroyal. *Hedeoma pulegioides*, Persoon.

OROBANCHEÆ.

Plants parasitic, herbaceous, subcarnose, and destitute of verdure, mostly brownish, or approaching to white, growing upon the roots of other vegetables; stems alternate and squamous, often simple; flowers bracteate, terminately spiked, rarely solitary; corolla irregular, sometimes bilabiate; stamina two, four, or eight, but most commonly four, inserted on the corolla, two of which are smaller than the others; ovary simple, superior, surmounted by a simple style, terminated by a simple stigma, seldom bi-lobed; fruit an unilocular and bi-celled capsule, seeds numerous.

Virginian cancer-root. *Orobanche virginiana*, Willd.
One-flowered cancer-root. *Orobanche uniflora*, Willd.

SOLANEÆ.

Plants herbaceous, annual or perennial; or shrubs of a gloomy, repulsive appearance; leaves alternate, the upper ones often geminate; flowers solitary, or spiked, commonly extra-axillary; calix persistent, monosepalous, and five-divided; corolla monopetalous, regular, rotate, or campanuliform, five-divided; stamina five; ovary simple, surrounded by a yellowish hypogynous disk; style simple; stigma bi-lobed; fruit, a bilocular, bivalved, and polyspermous capsule, or a bi-celled berry, with a rugose and shagreen-like surface, containing the seeds.

Deadly nightshade. *Atropa belladonna*, Lin.
Mandrake. *Atropa mandragora*, Lin.
Potato plant. *Solanum tuberosum*, Lin.
Bitter-sweet. *Solanum dulcamara*, Lin.
Garden nightshade. *Solanum nigrum*, Lin.
Winter cherry. *Physalis alkekengi*, Lin.
Black henbane. *Hyosciamus niger*, Lin.
White henbane. *Hyosciamus albus*, Lin.

Golden henbane. *Hyosciamus aureus*, Lin.
Tobacco. *Nicotiana tobacum*, Lin.
Thorn-apple. *Datura stramonium*, Lin.

BORRAGINEÆ.

Herbaceous plants, annual or perennial, seldom woody; leaves simple, alternate, sessile, commonly covered with stiff hair; flowers in ramose spikes, sometimes solitary, often unilateral, and furnished with bractes; calix persistent, monosepalous, five-divided; corolla monopetalous, regular; five stamina; ovary quadrilobed, supported on an hypogynous disk; style simple, stigma sometimes bi-lobed; fruit, a four-celled capsule, or a berry, with four seeds, sometimes a *tetrachene*.

Dog's tongue. *Cynoglossum officinale*, Lin.
Borrage. *Borrago officinalis*, Lin.
Comphrey. *Symphytum officinale*, Lin.
Bugloss. *Anchusa italica*, Lin.
Spotted lung-wort. *Pulmonaria officinalis*, Lin.
Sebesten plant. *Cordia mixa*, Lin.

CONVOLVULACEÆ.

Stems herbaceous, or sub-frutescent, twining, slender; leaves alternate; calix persistent, five deep divisions; corolla monopetalous, regular, entire, or five-divided; five stamina; ovary free, style simple, or with several divisions; stigmas as many as there are divisions to the style; fruit, a capsule covered by the calix, containing from two to four monospermous or polyspermous cells.

Jalap. *Convolvulus jalapa*, Lin.
Scammony. *Convolvulus scammonia*, Lin.
Turpeth. *Convolvulus turpethum*, Lin.
Wild potato. *Convolvulus panduratus*, Mich.
Mechoacan. *Convolvulus mechoacan*, Lin.
White convolvulus. *Convolvulus sepium*, Lin.
Common convolvulus. *Convolvulus arvensis*, Lin.
Sea convolvulus. *Convolvulus soldanella*, Moris.

GENTIANEÆ.

Stems herbaceous; leaves opposite, sessile, or petiolate, entire, or compound; flower terminal, or axillary, often furnished with bractes; calix persistent, monosepalous, and divided; corolla monopetalous, regular, tubular, five-divided; commonly five stamina; ovary surmounted by a simple or bifid style, and a bilobed stigma; fruit, a bivalved capsule, with two polyspermous cells.

Officinal gentian. *Gentiana lutea*, Lin.
Purple gentian. *Gentiana purpurea*, Lin.
Dotted-leaved gentian. *Gentiana punctata*, Lin.
Stemless gentian. *Gentiana acaulis*, Lin.
Blue gentian. *Gentiana catesbæi*, Walt.
American columbo. *Frasera walteri*, Mich.
Chiretta. *Chirayta*, Roxburgh.
European centaury. *Chironia centaurium*, Lam.

American centaury. *Chironia angularis*, Lin.
Buck bean. *Menyanthes trifoliata*, Lin.
Pink root. *Spigelia marylandica*, Lin.

APOCYNEÆ.

Stems herbaceous or woody, containing a milky juice; leaves opposite, sometimes alternate; flower terminal or axillary; calix monosepalous, five-divided; corolla monopetalous, regular; five stamina, sometimes free, at others monadelphous; two ovaries soldered in one; style short; stigma of a variable form; fruit a simple or double follicle, unilocular and polyspermous, or a berry with seeds sometimes furnished with a silky pappus.

Arguel. *Cynanchum arguel*, Delile.
Cynanchum ipecacouanha, Rich.
Cynanchum tomentosum, Lin.
Montpellier scammony. *Cynanchum monspeliacum*, Lin.
Tame poison. *Cynanchum vincetoxum*, Rich.
Larger periwinkle. *Vinca major*, Lin.
Codaga pala. *Nerium antidysentericum*, Lin.
St. Ignatius bean. *Strychnos ignatia*, Lin.
Nux vomica, poison nut. *Strychnos nux vomica*, Lin.
Strychnos colubrina, Lin.
Butterfly weed. *Asclepias tuberosa.*
Common silk weed. *Asclepias syriaca*, Mich.
Flesh-coloured silk weed. *Asclepias incarnata*, Mich.
Dog's bane. *Apocynum androsæmifolium*, Mich.
Periploca secamone, Lin.
Periploca emetica, Retz.

Class Ninth.

PERICOROLLIA.

(Corolla inserted on the calix.)

DIOSPYREÆ.

Stem ligneous, sometimes arborescent; leaves alternate, simple; flowers axillary; calix monosepalous, unequal, four or five-toothed, free, or soldered with the ovary; corolla monopetalous, regular, four or five-divided; stamina in variable number; ovary four-celled; style simple; stigma quadrilobed; fruit a capsule or berry with several monospermous cells.

Persimmon. *Diospyros virginiana*, Willd.
Officinal storax. *Styrax officinalis*, Lin.
Benzoin tree. *Styrax benzoe*, Dryander.

ERICINEÆ.

Trees or shrubs, with leaves alternate, opposite, or verticillate; flowers solitary, or in spikes; calix persistent, monosepalous, four or five-divided; corolla monopetalous, regular, five-divided, often persistent; stamina from eight to ten, with bilocular anthers; ovary five-celled; fruit a five-celled and five-valved capsule, containing seeds.

Bear's berry. *Arbutus uva ursi*, Lin.
Winter-green, pipsissewa. *Chimaphila umbellata*, Pursh.
Sorrel tree. *Andromeda arborea*, Willd.
Broad-leaved moor-wort. *Andromeda mariana*, Willd.
Mountain berry. *Gaultheria procumbens*, Willd.
Trailing epigea. *Epigea repens*, Willd.

CAMPANULACEÆ.

Plants herbaceous, annual or perennial, lactescent; leaves alternate, simple; flowers solitary or spicate, commonly blue or white; calix adherent at its base to the ovary, four or five-divided; corolla monopetalous, sometimes regular, at others irregular, five-lobed; five stamina, alternate with the lobes of the corolla, free or soldered together; ovary from two to five cells; style simple; stigma two, three, or five-lobed; fruit a capsule crowned by the calix, with from three to five polyspermous cells.

Indian tobacco. *Lobelia inflata*, Willd.
Cardinal flower. *Lobelia cardinalis*, Lin.
Blue cardinal. *Lobelia syphilitica*, Lin.

Class Tenth.

EPICOROLLIA-SYNANTHEREA.

(Corolla inserted on the pistil; stamina united.)

SYNANTHEREÆ.

Herbaceous or frutescent plants; leaves alternate or opposite, entire or gashed; flowers hermaphrodite, unisexual, or neutral, united in a capitulum, and supported by a receptacle, and surrounded by one or more rows of scales forming an involucre; every one of them is composed of a monopetalous, regular and tubular corolla, called *floret*, or of an irregular corolla, inclining to one side, called *semi-floret;* five stamina; anthers united; one simple style; stigma bifid; fruit an achene of variable form, naked, or crowned by a silky or plumose pappus.

This family is naturally divided into three tribes.

a. CARDUACEÆ.

Leaves alternate, frequently covered with thorns, flowers all flosculous; receptacle villous; style furnished with a circular row of hair, under the bifurcation of the stigma.

Ladies thistle. *Carduus marianus*, Lin.
Burdock. *Arctium lappa*, Lin.
Common star thistle. *Centaurea calicitrapa*, Lin.
Blessed thistle. *Centaurea benedicta*, Lin.
Corn flower. *Centaurea cyanus*, Lin.
Greater centaury. *Centaurea centaurium*, Lin.
St. Barnaby's thistle. *Centaurea jacea*, Lin.

b. CORYMBIFERÆ.

Flowers, all flosculous, hermaphrodite or unisexual, most commonly radiated, that is, with florets in the centre and semi-florets, either female or neutral, at

the circumference; receptacle naked, or furnished with pilose or scaly *pappi*, in number equal to that of the flowers; style, without hair.

Common chamomile. *Anthemis nobilis*, Lin.
Stinking chamomile. *Anthemis cotula*, Lin.
Dyer's chamomile. *Anthemis tinctoria*, Lin.
Pellitory of Spain. *Anthemis pyrethrum*, Lin.
Sneeze-wort. *Achillea ptarmica*, Lin.
Milfoil. *Achillea millefolium*, Lin.
Dwarf milfoil. *Achillea nana*, Lin.
Musk milfoil. *Achillea moschata*, Lin.
Maudlin tansy. *Achillea aratra*, Lin.
Wormwood. *Arthemisia absynthium*, Lin.
Roman wormwood. *Arthemisia pontica*, Lin.
Mugwort. *Arthemisia vulgaris*, Lin.
Santonicum, wormseed. *Arthemisia judaica*, Lin.
Icy wormwood. *Arthemisia glacialis*, Lin.
Spiked wormwood. *Arthemisia spicata*, Lin.
Southern wood. *Arthemisia abrotanum*, Lin.
Sementine. *Arthemisia contra*, Lin.
Stragon. *Arthemisia dracunculus*, Lin.
Common tansy. *Tanacetum vulgare*, Lin.
Alecost. *Tanacetum balsamita*, Lin.
Feverfew. *Matricaria parthenium*, Lin.
Dog's chamomile. *Matricaria chamomilla*, Lin.
Single marigold. *Calendula officinalis*, Lin.
Wild marigold. *Calendula arvensis*, Lin.
Leopard's bane. *Arnica montana*, Lin.
Elecampane. *Inula helenium*, Lin.
Colt's foot. *Tussilago farfara*, Lin.
Balm-leaved spilanthus. *Spilanthus acmella*, Lin.
Gardener's spilanthus. *Spilanthus oleracea*, Lin.
Groundsel. *Senecio vulgaris*, Lin.
Ayapana. *Eupatorium ayapana*, Ventenat.
Hemp agrimony. *Eupatorium cannabium*, Lin.
Wild horehound. *Eupatorium pilosum*, Walt.
Thorough-wort. *Eupatorium perfoliatum*, Willd.
Purple eupatorium. *Eupatorium purpureum*, Willd.
Canadian flea-bane. *Erigeron canadense.*
Pennsylvanian flea-bane. *Erigeron pennsylvanicum.*
Various-leaved scabious. *Erigeron heterophyllum.*

c. CICHORACEÆ.

Lactescent plants; *capitula* entirely formed of semi-florets.

Strong-scented lettuce. *Lactuca virosa*, Lin.
Common lettuce. *Lactuca sativa*, Lin.
Dandelion. *Leontodon taraxacum*, Lin.

Esculent vipers' grass. *Scorzonera hispanica*, Lin.
Wild succory. *Cichorium intybus*, Lin.

Class Eleventh.

EPICOROLLIA-CORISANTHERIA.

(Corolla inserted on the pistil; stamina distinct.)

DIPSACEÆ.

Stems herbaceous, seldom frutescent; leaves opposite; flowers capitate, resting on a common receptacle, furnished with scales, and surrounded with a common involucre; each flower provided with a proper involucre; calix adherent to the ovary; corolla monopetalous, tubular, four or five-lobed; four or five stamina; anthers distinct; ovary, style, and stigma, simple; fruit, a solitary seed covered over by the calix.

Common scabious. *Scabiosa arvensis*, Lin.

VALERIANEÆ.

Herbaceous plants, with opposite leaves; flowers naked, paniculate, or corymbose; calix adherent, irregular; corolla tubular, with five unequal lobes; stamina from one to five; ovary and style simple; stigma tripartite; fruit, an achene surmounted by the teeth of the calix, or by a plumose pappus.

Wild valerian. *Valeriana officinalis*, Lin.
Celtic nard. *Valeriana celtica*, Lin.
Garden valerian. *Valeriana Phu*, Lin.
Dioicous valerian. *Valeriana dioica*, Lin.

RUBIACEÆ.

Stem herbaceous or woody; leaves opposite, with simple stipules, or verticillate without stipules; calix adherent to the ovary, entire, four or five dentate; corolla monopetalous, regular, from four to five divisions; four or five stamina, alternate with the divisions of the corolla; ovary bi-celled, surmounted by a yellowish epigynous disk;* style bifid; two stigmas; fruit, sometimes two small monospermous shells; or either a capsule or a berry with two, four, five, or more monospermous or polyspermous cells.

Cheese-rennet. *Gallium verum*, Lin.
Asperula cynanchica, Lin.
Madder plant. *Rubia tinctorum*, Lin.
Gray or loxa bark. *Cinchona condaminea*, Humboldt.
Calisaya bark. *Cinchona cordifolia*, Mutis.
Orange bark. *Cinchona lancifolia*, Mutis.
Red bark. *Cinchona oblongifolia*, Mutis.
White bark. *Cinchona ovalifolia*, Mutis.
St. Domingo bark. *Exostemma floribunda*, Persoon.
St. Lucia bark. *Exostemma caribæa*, Persoon.
Georgia bark. *Pinkneya pubescens*, Michaux.

* [The disk or receptacle inserted on the pistil itself.]—Am. Eds.

Cinchona uneva. *Portlandia grandiflora*, Lin.
Coffee plant. *Coffea Arabica*, Lin.
Officinal ipecacuanha. *Cephaelis ipecacuanha*, Lin.
Striated ipecacuanha. *Psychotria emetica*, Lin.
White ipecacuanha. *Richardsonia brasiliensis*, Gomez.
Herbaceous psychotria. *Physchotria herbacea.*
Kino tree. *Nauclea gambeer*, Hunter.

CAPRIFOLIACEÆ.

Stems herbaceous, most commonly ligneous, sometimes twining from right to left; leaves opposite, simple; flowers solitary or in axillary or terminal panicles; calix adherent to the ovary; corolla monopetalous, regular or irregular; stamina from four to five; ovary surmounted by a disk; style simple or none at all; stigmas from one to three; fruit fleshy, crowned by the teeth of the calix, and containing one or more seeds.

Black elder. *Sambucus niger*, Lin.
Canadian elder. *Sambucus canadensis*, Willd.
Dwarf elder. *Sambucus ebulus*, Lin.
Fever-wort. *Triosteum perfoliatum*, Lin.

HEDERACEÆ.

Trees or shrubs with alternate leaves without stipules; flowers in simple umbels; calix four or five-toothed; corolla four or five distinct petals; four or five stamina, alternate with the petals; style and stigma simple; fruit fleshy, crowned with the teeth of the calix, and containing from two to five small nuts.

Dog-wood. *Cornus florida*, Lin.
Swamp dog-wood. *Cornus cericea*, Lin.
Round-leaved dog-wood. *Cornus circinata*, L'Herit.

§ 3. POLYPETALOUS.

Class Twelfth.

EPIPETALIA.

(Stamina and corolla inserted on the pistil.)

ARALIACEÆ.

Stems herbaceous, frutescent or aborescent; leaves alternate, compound, with a sheathing petiole at their base; flowers small, umbellate and furnished with an involucre; calix entire or dentate; corolla from five to six regular petals; stamina equal in number to the petals; seldom double the number of the petals; ovary five, six, ten, and twelve celled; style, as many stigmas as the ovary contains cells; fruit, a berry with one, two, five, and more monospermous cells.

Prickly ash. *Aralia spinosa*, Willd.
False sarsaparilla. *Aralia nudicaulis*, Willd.
Yellow-root. *Zanthoxylum fraxineum*, Willd.
Ginseng. *Panax quinquefolium*, Lam.

UMBELLIFERÆ.

Stem herbaceous, fistulous, sometimes ligneous; leaves alternate, sheathing, generally deeply cut, or composed of folioles of variable form and size; flowers small, white, in simple or compound umbels, surrounded by symmetrical folioles called *common* or *partial involucre;* calix five-toothed; corolla, five petals; five stamina; ovary bi-celled, surmounted by a nipple-formed disk; two styles, two very small stigmas; fruit a diachene of very variable form, and dividing when ripe, in two achene.

Anise plant. *Pimpinella anisum*, Lin.
Burnet saxifrage. *Pimpinella saxifraga*, Lin.
Caraway plant. *Carum carvi*, Lin.
Common parsley. *Apium petroselinum*, Lin.
Strong-scented parsley. *Apium graveolens*, Lin.
Baldmoney. *Meum vulgare*, Lin.
Sweet fennel. *Anethum fœniculum*, Lin.
Dill plant. *Anethum graveolens*, Lin.
Cumin. *Cuminum cyminum*, Lin.
Coriander. *Coriandrum sativum*, Lin.
Hemlock. *Conium maculatum*, Lin.
Hemlock. *Œthusa cynapium*, Lin.
Water Hemlock. *Cicutaria aquatica*, Lam.
American hemlock. *Cicuta maculata*, Willd.
Galbanum. *Selinum galbanum*, Lin.
Marsh smallage, *Selinum palustre*, Lin.
Carrot. *Daucus carota*, Lin.
Chervil. *Scandix cerefolium*, Lin.
Ammoniacum plant. *Heracleum gummiferum*, Willd.
Opopanax plant. *Pastinaca opopanax*, Lin.
Assafœtida plant. *Ferula assafœtida*, Lam.
Angelica plant. *Angelica archangelica*, Lin.
Sea fennel. *Crithmum maritimum*, Lin.
Common eryngo. *Eryngium campestre*, Lin.
Water eryngo. *Eryngium aquaticum.*
Sea holly. *Eryngium maritimum.*
Larger ammi. *Ammi majus*, Lin.
Lovage. *Ligusticum levisticum*, Lin.
Master-wort. *Imperatoria ostruthium*, Lin.

Class Thirteenth.

HYPOPETALIA.

(Stamina and corolla inserted on the receptacle of the pistil.)

RANUNCULACEÆ.

Herbaceous, and sometimes sub-frutescent plants, with alternate leaves, simple or compound; flowers generally large, of a fine colour; calix polysepalous, almost always corolliform, from three to five sepals; corolla sometimes wanting, or with five petals or more; stamina numerous, free; ovaries inserted on a common receptacle, in definite or indefinite numbers, solitary or soldered together,

each of them bearing a lateral style, and a simple stigma; fruits, compressed and capitate achenes; or either aggregated or distinct capsules, which are unilocular and polyspermous.

Bulbous-rooted crow-foot. *Ranunculus bulbosus*, Lin.
Meadow crow-foot. *Ranunculus acris*, Lin.
White anemone. *Anemone nemorosa*, Lin.
Traveller's joy. *Clematis vitalba*, Lin.
Virgin bower. *Clematis erecta*, Lin.
Pæony. *Pæonia officinalis*, Lin.
Black hellebore. *Helleborus niger*, Lin.
Green hellebore. *Helleborus viridis*, Lin.
Fetid hellebore. *Helleborus fœtidus*, Lin.
Stavesacre. *Delphinium staphisagria*, Lin.
Common wolf's-bane. *Aconitum napellus*, Lin.
Monk's hood aconite. *Aconitum lycoctonum*, Lin.
Aconitum anthora, Lin.
Gold thread. *Coptis trifoliata*, Salisb.
Yellow root. *Hydrastis canadensis*, Willd.
Parsely-leaved yellow root. *Zanthorrhiza apiifolia*, Willd.
Black snakeroot. *Cimicifuga serpentaria*, Pursh.

PAPAVERACEÆ.

Herbaceous plants, often annual, lactescent; leaves alternate; flowers large, solitary, terminal; calix composed of two concave and caducous sepals; corolla, four petals; stamina free, numerous; ovary free; stigma sessile, radiated, or lobed; fruit, a polyspermous capsule.

White poppy. *Papaver somniferum*, Lin.
Red corn poppy. *Papaver rhœas*, Lin.
Mexican poppy. *Argemone mexicana*, Willd.
Blood-wort. *Sanguinaria canadensis*, Willd.
Great celandine. *Chelidonium majus*, Lin.

FUMARIACEÆ.

Annual or perennial herbaceous plants, not lactescent; leaves alternate; calix very small, with two sepals; corolla irregular, calcarate, with four unequal petals; six diadelphous stamina; central anthers bi-celled; lateral ones uni-celled; ovary simple; style filiform; stigma bi-lamellate; fruit, a capsule in the form of a bi-valve silicle, or an achene; seeds with arils.

Officinal fumitory. *Fumaria officinalis*, Lin.
Spiked fumitory. *Fumaria spicata*, Lin.

CRUCIFERÆ.

Herbaceous plants with alternate leaves; flowers corymbose, paniculate, or in spikes; calix, four caducous sepals; corolla, four petals unguiculate and alternate with the divisions of the calix; stamina tetradynamous, that is, two small, and four large in two opposite pairs; ovary bi-celled; style short; stigma bilobed; fruit called *siliqua*, silicle, when it is elongate, bilocular, bivalved, and polyspermous, and *silicula* when short, elliptical, rounded, or angular.

Water cress. *Sisymbrium nasturtium*, Lin.
Hedge mustard. *Erysimum officinale*, Lin.
Stinking hedge mustard. *Erysimum alliaria*, Lin.
Black mustard. *Sinapis nigra*, Lin.
Common cardamine. *Cardamine pratensis*, Lin.
Dittander. *Lepidium sativum*, Lin.
Officinal cochlearia. *Cochlearia officinalis*, Lin.
Horse-radish. *Cochlearia armoracia*, Lin.

CAPPARIDEÆ.

Herbaceous plants, or shrubs with alternate leaves, simple and stipulate, or compound and without stipules; calix, four sepals; corolla, four petals, often irregular; stamina numerous; ovary stipitate, unilocular; style simple, or divided as well as the stigma; fruit elongate, fleshy, in the form of an unilocular berry or silicle, containing reniform seeds.

Caper plant. *Capparis spinosa*, Lin.

ACERINEÆ.

Trees with opposite leaves, simple or compound; flowers racemose or corymbose, often dioicous from abortiveness; calix monosepalous, persistent, five-divided; corolla, five unguiculate petals inserted on a hypogynous disk; stamina definite; ovary didymous; one style and one stigma, seldom two; fruit composed of two, and seldom of three dispermous and winged shells.

Sugar maple tree. *Acer saccharinum*, Lin.

HYPPOCASTANEÆ.

Trees or shrubs with opposite leaves, digitate, without stipules; flowers thyrsoid; calix monosepalous, tubular, five-divided; corolla, four unequal and unguiculate petals; stamina declined, from seven to eight; ovary trilocular; style simple; stigma trilobed; fruit, a tough and three-valved capsule, containing from one to five seeds, covered with a brown and shining envelope, marked with a large, whitish, and unpolished spot.

Horse-chesnut tree. *Œsculus hippocastanum*, Lin.

GUTTIFERÆ.

Very lofty trees, with leaves opposite, entire, tough, persistent; flowers axillary or terminal; calix monosepalous or polysepalous; four petals generally, of a yellow colour; stamina definite, free, or monadelphous; anthers elongate, adnate to the lateral parts of the filaments; ovary unilocular or multilocular; style and stigma simple; fruit variable, either a tough berry, with one or more seeds, or a monospermous or polyspermous capsule.

Gamboge tree. *Stalagmitis cambogioides*, Murray.
Camphor tree. *Dryobalanops camphora*, Colebroke.

AURANTIACEÆ.

Trees or shrubs with leaves alternate, simple or compound, persistent, shining, and very often furnished with glandular points; flowers axillary, whitish, or slightly purple; calix monosepalous, with four or five divisions; corolla four

or five petals; stamina generally ten, inserted on a hypogynous disk; ovary simple, with several cells; fruit a polyspermous berry.

Orange tree. *Citrus aurantium*, Lin.
Lemon tree. *Citrus medica*, Lin.
Bergamot tree. *Citrus bergamia*, Lin.

THEACEÆ.

Shrubs with leaves alternate, simple, not glandular, persistent; flowers axillary, very large; calix monosepalous, with from five to seven deep divisions; five or a greater number of petals disposed in two rows; stamina numerous, soldered in several bundles by their filaments; anthers rounded, bi-celled; ovary free, three or four-celled; style simple or divided; three to four stigmas; fruit a tough and hard capsule, with three or four prominent ribs with as many cells, containing from one to two seeds.

Chinese tea tree. *Thea sinensis*, Lin.
Camellia tree. *Camellia sasangua*, Lin.

MELIACEÆ.

Stem ligneous, frutescent, or arborescent; leaves alternate, simple; flowers in terminal panicles; calix monosepalous, four or five-divided; corolla, four or five petals, sessile, equal or unequal; stamina in an equal or double number to that of the petals; ovary, style, and stigma simple; fruit, a capsule with four or five monospermous or dispermous cells.

Canella alba. *Winterania canella*, Lin.
Pride of China. *Melia azedarach*, Lin.
Febrifuge swietenia. *Swietenia febrifuga*, Lin.

VINIFERÆ.

Sarmentose and climbing shrubs, with alternate, simple, or digitate leaves; tendrils ramose, and opposite to the leaves; flowers small, greenish, in clusters opposite to the leaves; calix short; corolla composed of four or six sessile petals; stamina opposite to the petals; ovary presenting a hypogynous disk, with two cells; style short and thick; fruit, a globular berry, containing from one to four seeds.

Vine. *Vitis vinifera*, Lin.

GERANIACEÆ.

Herbaceous and sometimes sub-frutescent plants, with opposite and occasionally alternate leaves, simple, or compound, with two stipules; flowers large and commonly of a brilliant colour; calix monosepalous, persistent, with five deep divisions; corolla five regular or irregular petals; from five to ten stamina, with filaments either free or monadelphous, all with or a few of them without anthers; ovary free, with from three to five prominent angles; style elongate; from three to five stigmas; fruit, from three to five unilocular, indehiscent, and monospermous arils.

Stinking cranes-bill. *Geranium robertianum*, Lin.
Bloody cranes-bill. *Geranium sanguineum*, Lin.
Common cranes-bill. *Geranium gruinum*, Lin.
Spotted cranes-bill. *Geranium maculatum*, Lin.

OXALIDEÆ.

Annual or perennial herbaceous plants, without any apparent stems; leaves petiolate, composed of sessile folioles, opposite, or almost verticillate; flowers terminal or axillary; calix monosepalous, with five deep divisions, persistent; corolla pentapetalous; ten monadelphous stamina; ovary five-celled; five styles and five stigmas; fruit a five-celled and polyspermous capsule, opening in five valves; the seeds are enveloped in a fleshy aril.

Wood sorrel. *Oxalis acetosella*, Lin.

MALVACEÆ.

Ligneous or herbaceous stems; leaves simple or compound, alternate, with stipules; flowers axillary or terminal; calix monosepalous, five-divided, having generally a second calix, called *exterior calix;* corolla pentapetalous; stamina numerous, with monadelphous filaments in the form of a tube; ovary with a great number of prominent ribs, or globular and five-celled; style simple or multifid; stigmas numerous; fruit, small capsules, indehiscent, unilocular, monospermous, in circular rows, or a single capsule, with five polyspermous cells, or finally a tough fruit, pulpy internally, and indehiscent.

Marsh mallow. *Althæa officinalis*, Lin.
Rose-coloured marsh mallow. *Althæa rosea*, Lin.
Common mallow. *Malva sylvestris*, Lin.
Round-leaved mallow. *Malva rotundifolia*, Lin.
Vervein mallow. *Malva alcea*, Lin.
Cacao tree. *Theobroma cacao*, Lin.

MAGNOLIACEÆ.

Trees or shrubs with alternate leaves; flowers large and very odorous; calix caducous, from three to four sepals; corolla, three or more petals forming several rows; stamina numerous; anthers elongate, and situated on the sides of the filaments; ovaries numerous, with a monospermous or polyspermous cell; fruit, bivalved capsules, or fruit, flat, thin, and indehiscent, seldom fleshy.

Winter's tree. *Drymis winteri*, Foster.
Star-anise. *Illicium anisatum*, Lin.
Tulip tree. *Liriodendron tulipifera*, Willd.
Small magnolia. *Magnolia glauca*, Willd.

SIMARUBEÆ.

Trees or shrubs with alternate and imparipinnate leaves, without stipules; flowers in terminal clusters or panicles; calix short, persistent, four or five-divided; five erect and caducous petals; ten stamina, free and fixed to a thick hypogynous disk; ovary, five prominent ribs; style simple; stigma multilobed; fruit, small drupes, ovoid and elongate, equal in number to the cells of the ovary, and containing each a small nut; although distinct, the drupes are all supported by the fleshy disk.

Bitter quassia tree. *Quassia amara*, Lin.
Lofty quassia tree. *Quassia excelsa*, Lin.
Simaruba tree. *Quassia simaruba*, Lin.

MENISPERMEÆ.

Sarmentose and twining shrubs, with alternate, simple, and petiolate leaves without stipules; flowers small, unisexual, commonly dioicous, in spikes or clusters; calix composed of several rows of sepals; corolla seldom wanting, and is generally composed of numerous petals, forming several rows; stamina monadelphous or free, in number equal, triple, quadruple to that of the petals; ovaries united at their base; styles and stigmas in equal number to the ovaries; fruit, a small monospermous drupe, recurvous, reniform, and containing a seed of similar form.

Indian berries. *Cocculus indicus. Menispermum cocculus*, Lin.
Columbo. *Menispermum palmatum*, Lin.
Pareira brava. *Cissampelos pareira*, Lin.

BERBERIDEÆ.

Herbaceous or ligneous plants, with alternate, simple, and sometimes pinnate leaves; flowers small, yellow, in spikes or clusters; calix, three or six caducous sepals; petals three or six, opposite to the divisions of the calix; stamina from three to six, opposite to the petals; anthers with two remote cells; ovary simple; style and stigma simple, the latter sometimes sessile; fruit, an unilocular and polyspermous berry, sometimes a capsule.

European barberry. *Berberis vulgaris*, Lin.
American barberry. *Berberis canadensis*, Mich.

PODOPHYLLEÆ.

Herbaceous plants, aquatic or growing in marshy places; leaves petiolate and peltinerves; flowers supported by one-flowered peduncles; calix three or foursepalous; corolla composed of several rows of petals, alternate with the divisions of the calix; stamina numerous; several many-celled ovaries; style very short, stigma thick and peltate; fruit fleshy, composed of *carpelles*,* in number equal to the cells of the ovary.

May apple. *Podophyllum peltatum*, Lin.

TILIACEÆ.

Trees, shrubs, and sometimes herbaceous plants, with alternate leaves, simple, and furnished with stipules; flowers axillary or terminal; calix coloured, caducous, with four or five deep divisions; corolla, four or five petals, alternate with the sepals; stamina numerous; anthers bi-celled; ovary simple, sessile, from two to five-celled; style simple, stigma two, three, or five-lobed; fruit, dry or succulent, with two or more monospermous or polyspermous cells.

Linden tree. *Tilia europæa*, Lin.

CISTEÆ.

Trees or shrubs, with opposite or simple leaves, with or without stipules; flowers axillary or terminal; calix monosepalous, with five deep divisions; corolla, five regular petals; stamina numerous; ovary globular, three to five-celled; style and stigma simple; fruit dry, from three to five polyspermous cells.

Cretican cistus. *Cistus creticus*, Lin.

* The name of *carpelle* is given to each of the fruit, or partial pistils produced by a single flower.

VIOLARIÆ.

Herbaceous or sub-frutescent plants, with simple and opposite leaves, furnished with stipules; flowers axillary, straight, or resupinate at the summit of the peduncle; calix deeply five-divided; corolla irregular, with five unequal petals, the inferior one larger; stamina, five, alternate with the petals; anthers bilocular; ovary free, unilocular; style straight or crooked; stigma simple, or inflated and concave, fruit, a tri-valved and polyspermous capsule.

Sweet-scented violet. *Viola odorata*, Lin.
Wild violet. *Viola arvensis*, Lin.
Heart's ease. *Viola tricolor*, Lin.
Dog's violet. *Viola canina*, Lin.
Ionide ipecacuanha. *Viola ipecacuanha*, Vent.

POLYGALEÆ.

Herbaceous or woody plants, with alternate leaves, without stipules; flowers terminal and spicate, sometimes solitary and axillary, furnished with two lateral bractes; calix, three, four or five regular or irregular divisions; corolla, from three to four petals, free or soldered at their base; eight diadelphous stamina, with soldered filaments, sometimes two or three free stamina only; anthers unilocular; ovary free, with one or two cells; stigma of various forms; fruit, a capsule with one or two monospermous and bivalved cells; seed, often furnished with an aril.

Bitter Polygala. *Polygala amara*, Lin.
Polygala rubella, Willd.
Polygala seneka. *Polygala senega*, Lin.
Ratanhia. *Krameria triandria*. Lin.
Krameria ixina, Lin.

RUTACEÆ.

Stems herbaceous or ligneous; leaves alternate or opposite, simple or compound; flowers terminal or axillary; calix monosepalous, deeply five-divided; corolla, four or five petals, seldom unequal; from eight to ten stamina, supported by a hypogynous disk; ovary with five ribs and as many cells; style simple; stigma five-lobed; fruit globular or compressed, with two, three, or five ribs, sometimes prominent and winged.

Common rue. *Ruta graveolens*, Lin.
Guaiacum. *Guaiacum officinale*, Lin.
True angustura. *Cusparia febrifuga*, Lin.
Diosma crenata, Lin.

CARYOPHYLLEÆ.

Stems herbaceous or sub-frutescent; leaves opposite, sessile; flowers spicate or in terminal bunches; calix monosepalous, five-toothed, persistent and tubular, or five-sepalous; corolla, five unguiculate petals; four, five, or ten stamina; ovary free, with one or many cells; styles, from one to five, and as many stigmas; fruit, a capsule with one or many multivalved and polyspermous cells; the fruit is sometimes bacciform.

Pink. *Dianthus caryophyllus*, Lin.
Soap-wort. *Saponaria officinalis*, Lin.
Ground pink. *Silene virginiana*, Willd.

LINACEÆ.

The plants belonging to this family differ from the preceding by their having alternate leaves, monadelphous stamina, petals not unguiculate, and by their having a capsule with ten monospermous cells.

Common flax. *Linum usitatissimum*, Lin.
Purging flax. *Linum catharticum*, Lin.

Class Fourteenth.

PERIPETALIA.

(Stamina fixed to the calix.)

PORTULACEÆ.

Herbaceous plants or shrubs with opposite or alternate leaves, generally thick and fleshy; calix free or semi-adherent to the ovary, with two or more divisions; corolla, four or five petals; stamina, variable; ovary, uni-celled or many-celled; style simple or divided; one or more stigmas; fruit, an unilocular or multilocular capsule, containing one or more seeds.

Common purcelaine. *Portulaca oleracea*, Lin.
Tamarisk tree. *Tamarix gallica*, Lin.

[SAXIFRAGEÆ.

Herbaceous plants, with leaves sometimes united at the base of the stem in the form of rosette; at others alternate, or even opposite; flowers solitary, corymbose or in clusters; calix monosepalous, with four or five divisions, more or less deep, free or more or less adherent; corolla, seldom wanting, generally composed of four or five petals, inserted on the upper part of the tube of the calix, and alternate with the divisions of the latter; stamina, in equal or double number, and inserted like the petals; ovary superior and free, rarely interior and adherent, surmounted by two styles and two stigmas; fruit, an unilocular or bi-locular capsule, opening at top in two valves; seeds numerous, fixed to the edges of the valves.

American sanicle. *Heuchera americana*, Willd.]

PARONYCHIEÆ.

Herbaceous or sub-frutescent stems; leaves furnished with stipules when opposite, and without stipules when connate; flowers terminal or axillary, cespitose or corymbose; calix monosepalous, five-divided; corolla, five squamiform petals, alternate with the divisions of the calix; stamina five, alternate with the petals; ovary free; one or more styles; one or more stigmas; fruit, an unilocular, monospermous or polyspermous capsule.

Smooth rupture-wort. *Herniaria glabra*, Lin.
Hairy rupture-wort. *Herniaria hirsuta*, Lin.

CRASSULACEÆ.

Herbaceous and succulent plants, with thick, fleshy, alternate, or opposite leaves; flowers spicate, corymbose or cymose; calix divided into a definite number of lobes; petals in number equal to the lobes of the calix, and alternate with them; stamina as many or double in number to the divisions of the corolla; ova-

ries as numerous as the petals, arranged in a circular line, and each of them furnished with a style and a stigma; fruit, an unilocular and polyspermous capsule.

Wall pepper. *Sedum acre*, Lin.

RIBESIEÆ.

Shrubs with alternate, petiolate, and lobed leaves, often furnished with prickles; flowers solitary, in spikes or clusters, or axillary; calix monosepalous, five-divided; corolla, five small petals, alternate with the divisions of the calix; five stamina, alternate with the petals, and inserted on a perigynous disk; anthers bilocular, cordiform; ovary unicelled; style simple or bifid; fruit, a globular berry, polyspermous and umbilicate at top.

Red currant. *Ribes rubrum*, Lin.
Black currant. *Ribes nigrum*, Lin.

MYRTINEÆ.

Trees or shrubs with persistent and opposite leaves; flowers axillary or terminal; calix monosepalous, adherent to the ovary, slightly four or five-divided; corolla polypetalous, regular; stamina numerous, free, or united in bundles; ovary unilocular or multilocular; fruit fleshy and bacciform, with one or more monospermous or polyspermous cells, or very dry and capsule-like.

Common myrtle. *Myrtus communis*, Lin.
Clove bark tree. *Myrtus caryophyllata*, Lin.
Pimento tree. *Myrtus pimenta*, Lin.
Clove tree. *Caryophyllus aromaticus*, Lin.
Pomegranate tree. *Punica granatum*, Lin.
Cajeput tree. *Melaleuca leucadendron*, Lin.

ROSACEÆ.

Herbaceous or ligneous plants, with alternate leaves, simple and more or less deeply cut, or compound of pinnate or digitate folioles; flowers generally white, solitary, and axillary, or capitate, in clusters, &c.; calix monosepalous, tubular, or expanded, with five divisions; rarely a small exterior calix; corolla, five equal and regular petals; stamina very numerous; ovaries very variable as to number and position, every one of them unilocular; style lateral; stigma simple; fruit very variable, sometimes a drupe, at others a number of small achenes united into a common receptacle.

Strawberry plant. *Fragaria vesca*, Lin.
Silver weed. *Potentilla anserina*, Lin.
Common cinquefoil. *Potentilla reptans*, Lin.
Tormentil. *Tormentilla erecta*, Lin.
Common avens. *Geum urbanum*, Lin.
American avens. *Geum rivale*, Lin.
Raspberry. *Rubus idæa*, Lin.
Common bramble. *Rubus fructicosus*, Lin.
Blackberry. *Rubus procumbens*, Lin.
Dewberry. *Rubus villosus*, Lin.
Drop-wort. *Spirea filipendula*, Lin.
Meadow-sweet. *Spirea ulmaria*, Lin.

Indian physic. *Gillenia trifoliata*, Moench.
Gillenia stipulacea, Moench.
Common agrimony. *Agrimonia eupatoria*, Lin.
Ladies mantle. *Alchemilla vulgaris*, Lin.
Burnet saxifrage. *Poterium sanguisorba*, Lin.
Wild cherry tree. *Prunus virginiana*, Lin.
Plum tree. *Prunus domestica*, Lin.
Sloe tree. *Prunus spinosa*, Lin.
Red cherry tree. *Cerasus vulgaris*, Miller.
Red cherry tree. *Cerasus mahaleb*, Miller.
Black cherry tree. *Cerasus avium*, Jussieu.
Bird cherry tree. *Cerasus padus*, De Candol.
Poison laurel. *Cerasus lauro-cerasus*, Rich.
Almond tree. *Amygdalus communis*, Lin.
Peach tree. *Persica vulgaris*, Miller.
Apricot tree. *Armeniaca vulgaris*, Lam.
Dog's rose. *Rosa canina*, Lin.
Red rose. *Rosa gallica*, Lin.
Pale rose. *Rosa centifolia*, Lin.
Apple tree. *Pyrus malus*, Lin.
Quince tree. *Cydonia vulgaris*, Rich.
Medlar tree. *Mespilus germanica*, Lin.

LEGUMINOSÆ.

Herbaceous plants, annual or perennial, or shrubs or trees, with leaves alternate, compound, digitate, or pinnate, furnished with two persistent stipules; flowers solitary, paniculate, in clusters, &c.; calix, monosepalous, tubular, or bell-shaped, with five divisions; corolla polypetalous and papilionaceous, or monopetalous and regular; stamina ten, sometimes diadelphous, at other distinct, or monodelphous; ovary simple; style and stigma simple; fruit, pod or legumen, unicelled or bicelled, bivalved, monospermous or polyspermous, sometimes divided by transversal partitions, forming as many one-seeded cells, or a monospermous, indehiscent, and bivalved capsule.

Rest harrow. *Ononis spinosa*, Lin.
Officinal melilot *Melilotus officinalis*, Lin.
Blue melilot. *Melilotus cæruleus*, Lin.
Stemless milk-vetch. *Astragalus exscapus*, Lin.
Tragacanth tree. *Astragalus gummifer*, Lin.
Astragalus verus, Olivier.
Bastard senna tree. *Colutea arborescens*, Lin.
Liquorice. *Glycyrrhiza glabra*, Lin.
Dragon's blood tree. *Pterocarpus draco*, Lin.
Sanders tree. *Pterocarpus santalinus*, Lin.
Copaiba tree. *Copaifera officinalis*, Lin.
Peruvian balsam tree. *Myroxylum balsamiferum*, Lin.
Balsam of tolu tree. *Myrospermum peruiferum*, De Cand.
Cabbage tree. *Geoffroya inermis*, Swartz.

Acute-leaved senna. *Cassia acutifolia*, Delile.
Obovate-leaved senna. *Cassia obovata*, Colladon.
American senna. *Cassia marylandica*, Willd.
Purging cassia. *Cassia fistula*, Lin.
Tamarind tree. *Tamarindus indica*, Lin.
Logwood. *Hæmatoxylum campechianum*, Lin.
Nephretic wood. *Guilandina moringa*, Lin.
Gum Arabic tree. *Mimosa nilotica*, Lin.
Catechu tree. *Mimosa catechu*, Lin.
Gum Senegal tree. *Mimosa senegal*, Willd.
Wild indigo. *Baptisia tinctoria*, Ventenat.
Cowhage. *Stizolobium pruriens*, Brown.
Virginia goats-rue. *Galega virginiana*, Pluck.

RHAMNEÆ.

Stems ligneous; leaves simple, opposite or alternate, with or without stipules; flowers small, generally greenish; calix monosepalous, spreading or turbinate, four or five-lobed; corolla four or five petals, seldom wanting; stamina from four to five; ovary free, two, three, or four-celled; style simple or divided; stigmas as numerous as the cells of the ovary; fruit dry and capsular, or fleshy and containing one or several small nuts.

Buckthorn. *Rhamnus catharticus*, Lin.
European black alder. *Rhamnus frangula*, Lin.
Jujube tree. *Rhamnus ziziphus*, Lin.
American black alder. *Prinos verticillatus*, Willd.
Common holly. *Ilex aquifolium*, Lin.
Evergreen cassine. *Ilex vomitoria*, Aiton.

TEREBINTHACEÆ.

Trees or shrubs with alternate leaves, generally trifoliate or pinnate; flowers small, in ramose clusters, hermaphrodite or unisexual, monoicous or dioicous; calix monosepalous, deeply four or five-divided; corolla pentapetalous, or wanting; stamina five or ten, alternate with the petals, and inserted on a perigynous disk; ovary free, unilocular, or multilocular; style short; stigma tri-lobed, or three distinct stigmas; fruit a drupe, dry or succulent, with a monospermous nut, or with several small nuts.

Elm-leaved sumach. *Rhus coriaria*, Lin.
Poison oak. { *Rhus toxicodendron*, Lin. / *Rhus radicans*, Nuttall.
Narrow-leaved sumach. *Rhus copallinum*, Willd.
Pennsylvania sumach. *Rhus glabrum*, Willd.
Virginia sumach. *Rhus typhinum*, Willd.
Pistachio nut tree. *Pistacia vera*, Lin.
Chio or Chian turpentine. *Pistacia terebinthus*, Lin.
Mastich tree. *Pistacia lentiscus*, Lin.
Mecca balsam, or Balm of gilead tree. { *Amyris opobalsamum*, Willd. / *Amyris gileadensis*, Lin.

Elemi tree. *Amyris elemifera*, Lam.
Amyris kataf, Forskall.
False angustura tree. *Brucea ferruginea.*
Olibanum tree. *Boswellia serrata*, Roxburgh.

Class Fifteenth.

DICLINIA.

EUPHORBIACEÆ.

Herbaceous or ligneous plants; leaves alternate, scattered, or opposite, sometimes thick and succulent; generally containing a very acrid milky juice; flowers unisexual, monoicous or dioicous, spicate or umbellate, seldom solitary, calix very often double, five or ten divided, the internal divisions coloured; male flowers, stamina variable, free or soldered by their filaments; female flowers, ovary globular, three-celled, and three-valved; three bifid styles; fruit, three bivalved and elastic shells, containing one or two seeds, which are furnished at top with a crest or *caruncle* of variable shape.

Euphorbium plant. *Euphorbia officinarum*, Lin.
Lesser cataputia spurge. *Euphorbia lathyris*, Lin.
Ipecacuanha spurge. *Euphorbia ipecacuanha*, Lin.
Large flowering spurge. *Euphorbia corollata.*
Wild spurge. *Euphorbia sylvatica*, Lin.
Gerard's spurge. *Euphorbia gerardiana*, Lin.
Cypress spurge. *Euphorbia cyparissias*, Lin.
French mercury. *Mercurialis annua*, Lin.
Cassada plant. *Jatropha manihot*, Lin.
Purging nut plant. *Jatropha curcas*, Lin.
Wild purging nut plant. *Jatropha gossypifolia*, Lin.
Spanish purging nut plant. *Jatropha multifida*, Lin.
Cascarilla tree. *Croton cascarilla*, Lin.
Croton plant. *Croton tiglium*, Lin.
Box tree. *Buxus sempervirens*, Lin.
Castor oil plant. *Ricinus communis*, Lin.

MYRISTICEÆ.

Trees containing a peculiar reddish juice; leaves alternate, not punctuated, petiolate, coriaceous; flowers unisexual and dioicous, axillary or terminal, in clusters or in panicles; calix three-divided, from four to twelve stamina, soldered by the filaments and by the anthers; ovary monospermous; two styles and two stigmas; fruit a drupe-like berry, monospermous, with a seed enveloped in an aril, generally, cut into numerous and irregular portions.

Nutmeg tree. *Myristica moschata*, Thunberg.

URTICEÆ.

Herbaceous plants, shrubs, or trees with alternate leaves furnished with stipules; flowers dioicous or monoicous, solitary or spicate; calix monosepalous, persistent, and deeply divided; male flowers, four or five stamina, alternate,

with the divisions of the calix; female flowers, ovary free and unilocular; two stigmas; fruit an achene, sometimes surrounded by the calix, which becomes fleshy and bacciform.

Fig tree. *Ficus carica*, Lin.
Contrayerva. *Dorstenia contrayerva*, Lin.
Black mulberry tree. *Morus nigra*, Lin.
Wall pellitory. *Parietaria officinalis*, Lin.
Hemp. *Cannabis sativa*, Lin.
Hop plant. *Humulus lupulus*, Lin.
Stinging nettle. *Urtica urens*, Lin.

JUGLANDEÆ.

Large trees with alternate and compound leaves; flowers unisexual, monoícous; male flowers in simple or compound aments at the extremity of the branches; calix squamiform, divided into two or six lobes; number of stamina undeterminate; female flowers solitary or united at the extremity of the branches; calix double, adherent to a simple and unilocular ovary, supporting two very thick stigmas, or one style with a quadrilobed stigma; fruit, a drupe slightly fleshy, containing a bivalved, or four-valved nut, the seed of which is uneven and cerebriform.

European walnut. *Juglans regia*, Lin.
White walnut. *Juglans Cinerea*, Lin.

CUPULIFERÆ.

Trees with simple, alternate, and stipulate leaves; flowers unisexual, monoicous; male flowers in elongate aments, caliciform scale diversely shaped; from five to twenty stamina; female flowers axillary, solitary, or united and surrounded by a scaly capsule; ovary, two or three cells; two or three stigmas; fruit, a dry, monospermous, and indehiscent *acorn*, surrounded by the cupula.

Common European oak. *Quercus robur*, Lin.
Gall nut oak. *Quercus infectoria*, Lin.
Spanish oak. *Quercus falcata*, Mich.

SALICINEÆ.

Trees or shrubs growing in moist soils, with alternate and simple leaves, furnished with stipules; flowers dioicous, in elongate or globular aments; male flowers, calicinal scale supporting an unilocular ovary; style short, with two bipartite stigmas; fruit, a small bivalved capsule, containing several very small seeds surrounded with a silky down.

Common white willow. *Salix alba*, Lin.
Common crack willow. *Salix fragilis*, Lin.
Broad-leaved willow. *Salix caprea*, Lin.
Triandrous willow. *Salix triandra*, Lin.
Black poplar. *Populus nigra*, Lin.

ULMACEÆ.

Trees with alternate and simple leaves, furnished with two small stipules; flowers hermaphrodite and axillary; calix, four or five-divided; four or five sta-

mina; ovary free, unilocular; two sessile, elongate, and glandular stigmas; fruit, membranous *samara*,* or a small monospermous drupe.

Common elm. *Ulmus campestris*, Lin.
Red or slippery elm. *Ulmus fulva*, Mich.
American elm. *Ulmus americana*, Mich.

[PLATANEÆ.

Trees with alternate, palmate, or sinuate leaves, furnished with stipules; flowers unisexual; male flowers united in globular aments, and containing numerous stamina; female flowers united likewise in globular aments, and containing a monospermous ovary surmounted by a style, on the internal side of which the stigma is fixed; seed resupinate.

Sweet-scented fern. *Comptonia asplenifolia*, Willd.]

[MYRICEÆ.

Shrubs with alternate or scattered leaves, with or without stipules; flowers dioicous, in axillary or terminal aments; male flowers composed of one or several stamina, often united together; female flower solitary and sessile, in the axilla of a bracte longer than the flower itself; ovary lenticular, unicelled, monospermous, and surmounted by a short and scarcely perceptible style, terminated by two very long and acute stigmas; around the ovary are several hypogynous scales of various forms, which may be considered as the perianthe; fruit dry, monospermous, indehiscent, sometimes membranous and winged at the edges.

Sweet willow. *Myrica gale*, Willd.
Wax myrtle. *Myrica cerifera*, Willd.
Carolinian wax myrtle. *Myrica caroliniensis*, Willd.
Pennsylvanian wax myrtle. *Myrica pennsylvanica*, Lam.]

CONIFEREÆ.

Resinous trees, with persistent, narrow, tubular, solitary or geminate, or fasciculate leaves; flowers unisexual, monoicous, or dioicous; male flowers amentaceous; stamina in definite or indefinite number, sessile, or supported by distinct or soldered filaments; female flowers in squamous aments, ovoid or globular, with large and imbricate scales; one or two flowers at the base of each scale; ovary conical; fruit, an ovoid or angular achene.

Long-leaved pine. *Pinus palustris*, Lin.
Wild pine. *Pinus sylvestris*, Lin.
Scotch pine. *Pinus rubra*, Lin.
Bordeaux pine. *Pinus maritima*, Lin.
Silver fir tree. *Pinus pinea*, Lin.
White larch. *Pinus larix*, Lin.
American silver fir. *Pinus balsamea*, Lin.
Juniper tree. *Juniperus communis*, Lin.
Savin tree. *Juniperus sabina*, Lin.
Red cedar. *Juniperus virginiana*, Lin.

* [An oligospermous fruit, membranous, compressed, uni or bilocular, indehiscent, often encompassed by a membranaceous alated border.]—Am. Eds.

TABLE OF CONTENTS.

Page.

PREFACE OF THE TRANSLATORS - 5
PREFACE OF THE AUTHORS - 13
TABLE OF ABBREVIATIONS - 16

CHAPTER I.

GENERAL CONSIDERATIONS - 17
Physical properties of remedies 18
Of the intimate nature and chemical properties of remedies - 24
Of the action of remedies - - 28
Of the administration of remedies 34
Of the choice of simple remedies 46
Of the classification of remedies 57

CHAPTER II.

CAUSTIC SUBSTANCES - - 60
Caustic potassa - - - - *ib.*
Caustic soda - - - - 61
Melted nitrate of silver - - 62
Butter of antimony - - - 63
White oxide of arsenic - - *ib.*
Red oxide of mercury - - 64
Sulphate of copper - - - 65
Verdigris - - - - - 66
Caustic water of ammonia - *ib.*
Concentrated mineral acids - 68
Deuto-chloride of mercury - *ib.*
Deutiodide of mercury - - *ib.*
Per-nitrate of mercury - - *ib.*

CHAPTER III.

EPISPASTICS AND RUBEFACIENTS 69
VESICATING SUBSTANCES DERIVED FROM THE ANIMAL KINGDOM - *ib.*
Spanish fly or cantharides - *ib.*
CANTHARIDIN - - - - 70
Potato fly, &c. - - - - 71
East India fly - - - - 72
VESICATING VEGETABLE SUBSTANCES - - - - - 73
Mezereon and its different species *ib.*
Leather wood, Moose wood - *ib.*
Mustard seed - - - - 74
Euphorbium - - - *ib.*
Oil of horsemint - - - 75
Clematis vitalba - - - *ib.*

Page.

Ranunculus bulbosus - - 75
Ranunculus acris - - - *ib.*
Anemone nemorosa - - - *ib.*
Arum maculatum - - - *ib.*
Chelidonium majus - - - *ib.*
Plumbago europæa - - - *ib.*
Sedum acre - - - - *ib.*
Urtica urens, &c. - - - *ib.*

CHAPTER IV.

ASTRINGENT MEDICINES - - 76
MINERAL ASTRINGENT MEDICINES 77
Sulphuric acid - - - - *ib.*
Alum - - - - - 79
Sulphate of iron - - - 80
Oxide of zinc - - - - 81
Sulphate of zinc - - - 82
Protoxide of lead - - - *ib.*
Deutoxide of lead - - - 83
Neutral acetate of lead - - *ib.*
Liquid sub-acetate of lead - 84
Sub-carbonate of lead - - *ib.*
Borax - - - - - 85
Lime - - - - - - *ib.*
VEGETABLE ASTRINGENT SUBSTANCES - - - - 86
Catechu - - - - - *ib.*
Dragon's blood - - - 87
Logwood - - - - 88
Acacia vera - - - - *ib.*
Oak bark - - - - - *ib.*
QUERCIA - - - - - 89
Gall-nuts - - - - - 90
Ratanhy root - - - - *ib.*
Gum kino - - - - - 91
Madder root - - - - *ib.*
Swietenia febrifuga - - - 92
Persimon - - - - - *ib.*
Bistort root - - - - *ib.*
Spotted cranes-bill - - - 93
Beech drop or cancer root - 94
One-flowered cancer root - *ib.*
American sanicle or alum root - *ib.*
Marsh rosemary or sea lavender 95
Sweet fern - - - - - *ib.*
Pomegranate - - - - 96
Red rose - - - - - 97
Sweet briar - - - - *ib.*

Page.

Tormentil root - - - - 98
Benet or avens - - - *ib.*
Water avens - - - - *ib.*
Dewberry - - - - 99
Blackberry - - - - *ib.*
Witch hazel - - - - *ib.*
Sorrel tree - - - - *ib.*
Andromeda mariana - - - *ib.*
Narrow-leaved sumach - - 100
Pennsylvania sumach - - *ib.*
Virginian sumach - - - *ib.*
Silver weed - - - - *ib.*
Cinquefoil - - - - *ib.*
Wild strawberry - - - *ib.*
Agrimony - - - - *ib.*
Ladies mantle - - - - *ib.*
Meadow sweet - - - - *ib.*
Common sumach - - - *ib.*
Common cypress - - - *ib.*
Tamarisk tree - - - - *ib.*
Large and small periwinkle - *ib.*
Stinking cranes-bill - - - *ib.*
Bloody cranes-bill - - - *ib.*
Eye-bright - - - - *ib.*
Broad-leaved plantain - - *ib.*

CHAPTER V.

Tonic Substances - - - 101
Tonic Mineral Substances - 103
Iron filings - - - - *ib.*
Black oxide of iron - - - 104
Peroxide of iron - - - 105
Sub-carbonate of iron - - *ib.*
Tartrate of potassa and iron - 106
Protochloride of iron - - *ib.*
Hydrochlorate of peroxide of iron 107
Hydrochlorate of iron and ammonia - - - - - - *ib.*
Tonic Mineral Waters - - 108
Schooley's mountain spring - 109
Pittsburgh chalybeate mineral spring - - - - - - *ib.*
Yellow spring - - - - 110
Bedford chalybeate spring - *ib.*
Cheltenham springs - - - *ib.*
Hartfell chalybeate water - - 111
Spa chalybeate water - - *ib.*
Pyrmont chalybeate water - *ib.*
Passy chalybeate water - - *ib.*
Forges chalybeate water - - 112
Bath, near Bristol, (Pennsylvania) *ib.*
Yellow springs, (Virginia) - *ib.*
Yellow springs, (Pennsylvania) *ib.*
Aumale - - - - - - *ib.*
Vichy - - - - - - *ib.*
Tunbridge - - - - - *ib.*
Scarborough - - - - - *ib.*

Page.

Tonic Vegetable Substances 113
Peruvian bark - - - - *ib.*
Gray, Loxa, or Crown bark - *ib.*
Yellow or Calisaya bark - - *ib.*
Orange bark - - - - 114
Red bark - - - - - *ib.*
White bark - - - - 115
Cinchonia - - - - 119
Sulphate of cinchonia - - *ib.*
Quinia - - - - - - 120
Sulphate of quinia - - - 121
Acetate of quinia - - - 122
St. Domingo or Piton bark - *ib.*
Caribbee or St. Lucia bark - *ib.*
Cinchona nueva - - - 123
Bi-coloured bark - - - *ib.*
Georgia bark - - - - *ib.*
Dog wood, large-flowered cornal *ib.*
Swamp and round-leaved dog wood - - - - - - 124
Cornia - - - - - - 125
Sulphate of cornia - - - *ib.*
Quassia - - - - - *ib.*
Simaruba - - - - - 127
Angustura bark - - - *ib.*
American black alder - - 128
Columbo - - - - - 129
Gentian - - - - - 130
Gentianin - - - - 132
American columbo - - - 133
Blue gentian - - - - *ib.*
Chiretta or Chirayta - - - 134
Small centaury - - - - *ib.*
American centaury - - - 135
Mealy star-wort, star-grass - *ib.*
Marsh trefoil, buck bean - - 136
Burdock - - - - - 137
Holy thistle - - - - 138
Star thistle - - - - *ib.*
Greater centaury - - - *ib.*
St. Barnaby's thistle - - *ib.*
Corn flower - - - - *ib.*
St. Mary's thistle - - - *ib.*
Thorough-wort, boneset, Indian sage - - - - - *ib.*
Wild horehound - - - 140
Ayapana - - - - - *ib.*
Elecampane - - - - *ib.*
Coltsfoot - - - - - 141
Wild succory - - - - *ib.*
Dandelion - - - - 142
Hops - - - - - 143
Lupulin - - - - - 144
White willow - - - - *ib.*
Salix fragilis - - - - 145
Salix capræa - - - - *ib.*
Salix triandria - - - - *ib.*
Garden patience or dock - - *ib.*

	Page.
Fumitory	146
Soap wort	*ib.*
Iceland moss	147
Lichen pulmonarius	148
Lichen aphtosus	*ib.*
Lichen pyxidatus	*ib.*
Horse-chesnut tree bark	*ib.*
Common holly	*ib.*
Olive tree leaves	149
Common lilac capsules	*ib.*
Bitter polygala	*ib.*
Polygala rubella	*ib.*
Wild indigo	*ib.*
Gold thread	150
Yellow root, yellow puccoon	*ib.*
Parsley-leaved yellow-root	151
Codaga-pala	*ib.*
TONIC ANIMAL SUBSTANCES	*ib.*
Extract of beef-gall	*ib.*

CHAPTER VI.

	Page.
STIMULANTS OR EXCITANTS	152
DIFFUSIBLE OR GENERAL STIMULANTS	154
GENERAL STIMULANTS OBTAINED FROM THE MINERAL KINGDOM	*ib.*
Hydrochlorate of ammonia	*ib.*
Neutral acetate of ammonia	155
Sub-carbonate of ammonia	157
Volatile salt of hartshorn	158
Volatile spirit of hartshorn	*ib.*
Arsenite of potassa	*ib.*
Bi-arseniate of potassa	159
Arseniate of soda	*ib.*
Arseniate of ammonia	*ib.*
Proto-arseniate of iron	160
Nitric acid	*ib.*
Sulphurous acid	161
Hydrochloric acid	162
Chlorine	163
Chloride of lime	165
Chloride of soda	166
Chloride of potassa	167
ACIDULOUS OR GASEOUS MINERAL WATERS	*ib.*
Thermal waters	168
Lebanon spring	*ib.*
Bedford limestone spring	*ib.*
Bath spring	*ib.*
Buxton thermal waters	169
Bristol hot well	*ib.*
Mont d'or spring	*ib.*
Vichy spring	170
Seltz or Selters spring	*ib.*
Saint Myon spring	*ib.*
Pongues spring	*ib.*
Chateldon spring	*ib.*
Bar spring	170
Ussat spring	*ib.*
Tryaire spring	*ib.*
GENERAL STIMULANTS FURNISHED BY THE VEGETABLE KINGDOM	171
Cinnamon	*ib.*
Malabar cinnamon, Cassia lignea	173
Culilawan bark, Clove bark	*ib.*
Bay tree, Apollo's laurel	*ib.*
Canella alba	*ib.*
Cascarilla	174
Winter's bark	175
Tulip tree	*ib.*
Badian or star aniseed	176
Vanilla	*ib.*
Nutmeg	177
Mace	178
Cloves	*ib.*
Pimento, Jamaica pepper, All-spice	179
Cockspur pepper, Cayenne pepper	*ib.*
CAPSICIN	180
Ethereal oil of capsicum	*ib.*
Black pepper	181
White pepper	182
Long pepper	*ib.*
Betel	*ib.*
PIPERIN	*ib.*
Ethereal oil of black pepper	183
Extract of black pepper	*ib.*
Cubebs	*ib.*
Contrayerva	184
Water eryngo, button wood	*ib.*
Ginger	185
Small cardamom	*ib.*
Great and middle cardamoms	186
Maleguetta, maniguetta, grains of paradise	*ib.*
Round zedoary	*ib.*
Curcuma, turmeric	187
Long zedoary	*ib.*
Galangal	*ib.*
Virginia snake-root	*ib.*
Aristolochia rotunda et A. longa	188
Canada snake-root, wild ginger	189
Coffee	*ib.*
Horse-radish	190
Cochlearia, scurvy-grass	191
Water cress	192
Dittander	*ib.*
Cardamine	*ib.*
Stinking hedge mustard	*ib.*
Seneka or rattlesnake root	*ib.*
Senegin	193
Common polygala	*ib.*
Speedwell	*ib.*
Wormwood	194

Page.

Roman or small wormwood - 195
Mugwort - - - - - *ib.*
Roman chamomile - - - *ib.*
May weed, Stinking chamomile 196
Dyer's chamomile - - - *ib.*
Pyrethrum, pellitory of Spain - *ib.*
Fever few - - - - - 197
Sweet-scented golden rod - *ib.*
Common chamomile - - 198
Milfoil - - - - - - *ib.*
Sneeze-wort - - - - *ib.*
Single marigold - - - *ib.*
Balm-leaved spilanthus - - *ib.*
Common tansy - - - - *ib.*
Officinal alecost - - - *ib.*
Peppermint - - - - *ib.*
Crisped mint - - - - 199
Green or spear mint - - *ib.*
Pennyroyal - - - - *ib.*
Garden mint - - - - *ib.*
Sage - - - - - - *ib.*
Meadow sage - - - - *ib.*
Garden clary - - - - *ib.*
Rosemary - - - - *ib.*
Lavender - - - - 200
Broad-leaved lavender - - *ib.*
Stœchas or French lavender - 201
Balm - - - - - - *ib.*
Hyssop - - - - - - *ib.*
Horehound - - - - 202
Dittany, wild basil - - - *ib.*
Blue scull-cap, hooded willow-herb - - - - - *ib.*
Ground ivy - - - - 203
Stinking horehound - - *ib.*
Common germander - - *ib.*
Ground pine - - - - *ib.*
Water germander - - - *ib.*
Wood betony - - - - *ib.*
Sweet and wild marjoram - *ib.*
Common thyme - - - *ib.*
Mother of thyme - - - *ib.*
Catmint - - - - - - *ib.*
Common basilic - - - *ib.*
Summer savory - - - *ib.*
Dead nettle - - - - *ib.*
Mother-wort - - - - *ib.*
Self-heal - - - - - *ib.*
Garden angelica - - - *ib.*
Fennel seed - - - - 204
Dill seed - - - - - *ib.*
Aniseed - - - - - *ib.*
Caraway seed - - - - *ib.*
Cumin - - - - - 206
Coriander seed - - - *ib.*
Chervil - - - - - *ib.*
Carrot root and seed - - *ib.*
Common parsley - - - 207

Page.

Odorous apium - - - 207
Master-wort - - - - *ib.*
Sweet flag - - - - *ib.*
Indian turnip - - - - 208
Orange peel - - - - 209
Lemon peel - - - - *ib.*
Curassoa oranges - - - *ib.*
Tea - - - - - - - 210
Turpentine - - - - 211
Essential oil or essence of turpentine - - - - - 212
Burgundy pitch - - - 214
Colophony or dry resin - - *ib.*
Yellow resin - - - - *ib.*
Black pitch - - - - *ib.*
Tar or liquid pitch - - - 215
Fir buds - - - - - *ib.*
Juniper - - - - - *ib.*
Balsam of Gilead, Mecca, Judea, or Syria - - - - 216
Resin elemi - - - - *ib.*
Myrrh - - - - - 217
Mastiche - - - - - 218
Chio or Chian turpentine - - 219
Olibanum or incense - - - *ib.*
Peruvian balsam - - - 220
Balsam of tolu - - - - *ib.*
Resin or balsam copaiba - - 221
Essential oil of copaiba - - 222
Benzoin - - - - - 223
Benzoic acid - - - - 224
Solid styrax or storax - - *ib.*
Liquid styrax - - - - 225
Labdanum or ladanum - - *ib.*
Poplar tree buds - - - *ib.*
Prickly ash or tooth-ache tree - *ib.*
Prickly yellow wood - - 226
Spikenard, prickly-ash - - *ib.*
Small spikenard, false sarsaparilla root - - . - - 227
Ginseng - - - - - *ib.*
Stinking ground-pine - - *ib.*
Mexican tea - - - - 228

CHAPTER VII.

On Special Stimulants - - 229
Remedies acting especially upon the Secreting Vessels of the Kidneys, or Diuretics - *ib.*
Diuretic Animal Substances 230
Sub-carbonate of potassa - - 231
Neutral carbonate or bi-carbonate of potassa - - - - 233
Nitrate of potassa - - - *ib.*
Acetate of potassa - - - 234
Sub-carbonate of soda - - 235
Bi-carbonate of soda - - *ib.*

	Page.
Acetate of soda	236
Medicinal or amygdalate soap	*ib.*
Diuretic Remedies furnished by the Vegetable Kingdom	238
Squill	*ib.*
Sparrow-grass	239
Asparagin	*ib.*
Butcher's broom	240
Bear's berry, bear's whortle-berry	*ib.*
Pipsissewa, winter-green	*ib.*
Mountain tea	241
Evergreen cassine, South sea tea	242
Philadelphia flea-bane, scabious	*ib.*
Canadian flea-bane	*ib.*
Various-leaved flea-bane, sweet scabious	*ib.*
Wall pellitory	*ib.*
Crenate diosma, Bechu	243
Colchicum autumnale	*ib.*
Digitalis purpurea	*ib.*
Smallage	244
Common parsley	*ib.*
Pareira brava root	*ib.*
Rest harrow	*ib.*
Caper plant	*ib.*
Rupture-wort	*ib.*
Ceterach	*ib.*
Winter cherry	*ib.*
Stimulant Remedies which act especially on the Skin	244
Mineral substances	245
Brimstone, sulphur	*ib.*
Sulphuret of potassa	247
Sulphuret of soda	248
Sulphuret of lime	*ib.*
Sulphurous mineral waters	*ib.*
Sulphur spring, near Saratoga	249
Sulphur spring, Ballston	*ib.*
Sulphur spring, Bedford	*ib.*
Harrogate spring	*ib.*
Moffat spring	250
Aix-la-Chapelle spring	*ib.*
Aix, in Savoy, spring	*ib.*
Bagneres de Luchon spring	251
Bareges spring	*ib.*
Bonnes spring	*ib.*
Cauterets spring	252
Saint Sauveur spring	*ib.*
Enghien spring	253
Simple hydrosulphurous water	*ib.*
Acidulous or Naples hydrosulphurous water	*ib.*
Hydrosulphurous water for bath	*ib.*
Vegetable Substances	254
Guaiacum wood	*ib.*
Resin of guaiacum	*ib.*
Sarsaparilla	255
Parillin	256
China root	257
Sassafras	*ib.*
Bitter sweet	258
Garden nightshade	259
Solania	*ib.*
Pleurisy root, Flux root	*ib.*
Common silk weed	260
Flesh-coloured silk weed	*ib.*
Swallow-wort, Tame poison	*ib.*
Provence reed	261
Broom reed	*ib.*
Poison oak	262
Blue lobelia, Blue cardinal flower	*ib.*
Red cardinal flower	263
Red sanders wood	*ib.*
White and yellow sanders	*ib.*
Rhodium, or rose wood	*ib.*
Long and round Cyprus grass	*ib.*
German sarsaparilla	*ib.*
Stemless milkvetch	*ib.*
Common field scabious	*ib.*
Common elm tree bark	*ib.*
Black currant	*ib.*
Spanish viper grass	*ib.*
Red pink	*ib.*
Remedies acting in a Special manner on the Organs of Generation	264
Common rue	*ib.*
Savin	265
Red cedar	*ib.*
Saffron	266
Ergot, or Spurred rye	267
American pennyroyal	269
Horsemint	*ib.*
Stimulant remedies acting especially on certain Glands and Absorption generally	*ib.*
Iodine	270
Hydriodate of potassa	271
Hydriodate of soda, baryta, and lime	272
Sponge	*ib.*
Hydriodated Mineral Waters	*ib.*
Mercury	273
Proto-chloride of mercury	275
Deuto-chloride of mercury	276
Protiodide of mercury	277
Deutiodide of mercury	278
Red sulphuret of mercury	*ib.*
Black sulphuret of mercury	279
Cyanuret of mercury	*ib.*
Black oxide of mercury	280
Gray oxide of mercury	281
Proto-nitrate of mercury	*ib.*
Super-nitrate of mercury	282
Solution of mercury	*ib.*
Acetate of mercury	*ib.*

Page.
Sub-deuto-sulphate of mercury 283
Chloride of gold - - - *ib.*
Chloride of gold and sodium - 284
Deutoxide of gold - - - *ib.*
Metallic gold - - - - *ib.*
Hydro-chlorate of platinum and soda - - - - - - 285
Chloride of barium - - - *ib.*
Hydrochlorate of lime - - *ib.*
STIMULANT REMEDIES, THE ACTION OF WHICH IS ESPECIALLY SPENT ON THE NERVOUS SYSTEM - 286
Direct stimulant on the nervous system - - - - - 287
Phosphorus - - - - *ib.*
Nux vomica - - - - 288
Saint Ignatius bean - - - 289
Snake-wood - - - - 290
Upas tiente - - - - *ib.*
STRYCHNIA - - - - *ib.*
Sulphate of strychnia - - *ib.*
False angustura bark - - 291
BRUCIA - - - - - *ib.*
Sulphate of brucia - - - 292
Hydrochlorate of brucia - - *ib.*
Arnica - - - - - - *ib.*
Wine - - - - - - 294
Astringent or dry wines - - *ib.*
Sweet wines - - - - *ib.*
Sparkling wines - - - *ib.*
Names of wines, &c. and proportion of alcohol contained in one hundred parts - - - 295
Alcohol - - - - - *ib.*
Antispasmodics - - - 297
Sulphuric or hydratic ether - 298
Hydrochloric ether - - - 299
Nitric, or rather nitrous ether - 300
Spirit of nitrous ether - - *ib.*
Acetic ether - - - - 301
Camphor - - - - *ib.*
Assafœtida - - - - 304
Gum ammoniac - - - 305
Galbanum - - - - 306
Sagapenum - - - - *ib.*
Opopanax - - - - *ib.*
Marsh smallage - - - 307
Skunk cabbage - - - *ib.*
Wild valerian - - - - 308
Garden valerian - - - 309
Small valerian - - - - *ib.*
Celtic valerian or nard - - *ib.*
Orange flowers - - - *ib.*
Orange leaves - - - - 310
Lime, or linden-tree flowers - *ib.*
Cajeput oil - - - - 311
Pæony root - - - - *ib.*
Stinking orach - - - 312

Page.
ANTISPASMODIC SUBSTANCES OF THE ANIMAL KINGDOM - - 312
Musk - - - - - - *ib.*
Castor - - - - - - 313
Castorin - - - - - *ib.*
Civet - - - - - - 314
Ambergris - - - - *ib.*
Succin or yellow amber - - 315
Succinic acid - - - - 316
Dippel's animal oil - - - *ib.*

CHAPTER VIII.

Narcotic remedies - - - 317
Opium - - - - - - 318
Denarcotized laudanum - - 322
Poppy-heads - - - - 323
Red poppy - - - - - *ib.*
MORPHIA - - - - - *ib.*
Acetate of morphia - - - 326
Sulphate of morphia - - *ib.*
Nitrate of morphia - - - 327
Hydrochlorate and nitrate of morphia - - - - - - *ib.*
NARCOTIN or Derosne's salt - *ib.*
Prickly poppy - - - - 328
Blood root, Puccoon - - *ib.*
SANGUINARA - - - - 330
Belladonna, Deadly nightshade 331
ATROPIA - - - - - *ib.*
Mandrake root - - - - 332
Stramonium, Thorn apple - *ib.*
DATURIA - - - - - 333
Tobacco - - - - - *ib.*
Henbane - - - - - 334
HYOSCIAMA - - - - 335
White and yellow henbane - *ib.*
Strong-scented lettuce - - 336
TRIDACE, LACTUCARIUM - - *ib.*
Purple digitalis, Fox-glove - 337
DIGITALIN - - - - *ib.*
Black snake-root - - - 339
Hemlock - - - - - 340
CONIIN - - - - - 341
Water hemlock - - - 342
Small cicuta - - - - *ib.*
American hemlock - - - *ib.*
Aconite - - - - - *ib.*
ACONITA - - - - - 343
Wild cherry tree - - - *ib.*
Cherry laurel - - - - 344
Bitter almonds - - - 345
Peach almonds - - - *ib.*
Apricot almonds, &c. - - *ib.*
Prussic acid - - - - 346
Cyanuret of potassium - - *ib.*
Cyanuret of zinc - - - 349

CHAPTER IX.

Page.

Emetic Substances - - 350
Mineral Emetic Substances - *ib.*
Super-tartrate of potassa and antimony - - - - - - *ib.*
Sub-hydrosulphate of antimony, or kermes mineral - - 352
Sulphuretted sub-hydrosulphate of antimony, or golden sulphuret of antimony - - - 353
Sulphuret of antimony - - 354
Glass of antimony - - - 355
Antimonial powder - - - *ib.*
Washed and unwashed diaphoretic antimony - - - - *ib.*
Algarotti's powder - - - *ib.*
Crocus metallorum - - - *ib.*
Officinal or annular ipecacuanha 356
Striated ipecacuanha - - 357
White or undulated ipecacuanha *ib.*
Emetia - - - - - - 358
Impure emetia - - - - 359
Ipecacuanha spurge - - - *ib.*
Large flowering spurge - - 360
Indian physic - - - - *ib.*
Poke root - - - - - 361
Indian tobacco - - - - 362
Dog-bane - - - - - 363
Wax myrtle - - - - 364
Myrtle wax - - - - *ib.*
Ionide - - - - - - 366
Sweet-scented violet - - *ib.*
Wild violet - - - - *ib.*
Dog violet - - - - *ib.*
Violin, Violia - - - *ib.*
Cynanchum ipecacuanha - - 367
Cynanchum tomentosum - - *ib.*
Asclepias curassavica - - *ib.*
Periploca emetica - - - *ib.*
Euphorbia cyparisias, &c. - *ib.*

CHAPTER X.

Purgative Remedies - - 368
Mineral Purgative Substances 370
Sulphate of soda - - - *ib.*
Sulphate of magnesia - - 371
Sulphate of potassa - - - 372
Neutral tartrate of potassa - 373
Tartrate of potassa and soda - *ib.*
Sub-phosphate of soda - - *ib.*
Purgative mineral waters - - 374
Saratoga and Ballston springs - *ib.*
Lowe's well, (Ballston) - - 375
Congress spring, (Saratoga) - *ib.*
Ballston spa - - - - 376
Albany spring - - - - 377

Page.
Bedford spring, (Pennsylvania) 377
Anderson's spring - - - *ib.*
Fletcher's spring - - - 378
Saline spring, (Big-bone) - *ib.*
Balaruc spring - - - - 379
Bourbonne les bains spring - *ib.*
Epsom spring - - - - *ib.*
Seidlitz spring - - - - *ib.*
Vegetable Purgative Substances - - - - - - 380
Jalap - - - - - - *ib.*
Resin of jalap - - - - 381
Aleppo scammony - - - *ib.*
Smyrna scammony - - - 382
Spurious or Montpellier scammony - - - - - *ib.*
Mechoacan - - - - *ib.*
Wild potato - - - - 383
Turpeth - - - - - *ib.*
Soldanella - - - - - 384
May apple, Mandrake - - *ib.*
Fever root - - - - 385
Colocynth - - - - *ib.*
Elaterium - - - - 386
Elatin - - - - - 387
Bryony - - - - - *ib.*
Bryonin - - - - - 388
Aloes - - - - - - *ib.*
Socotorine aloes - - - *ib.*
Hepatic or Barbadoes aloes - 389
Caballine aloes - - - *ib.*
Gamboge - - - - 391
Meadow saffron - - - 392
White hellebore root - - 393
American hellebore - - - *ib.*
Cevadilla - - - - - 394
Veratria - - - - *ib.*
Black hellebore - - - 395
Green hellebore - - - *ib.*
Stinking hellebore - - - *ib.*
Croton oil - - - - 396
Purging or Barbadoes nut - 397
Jatropha curcas - - - *ib.*
Jatropha gossipifolia - - *ib.*
Jatropha multifida - - - *ib.*
Catapucia oil - - - - *ib.*
Buckthorn - - - - 398
Rhubarb - - - - - 399
Rhabarbarin - - - - 400
Rapontic - - - - - 402
Senna - - - - - - *ib.*
Cathartin - - - - *ib.*
American senna - - - 404
White walnut, Butter nut - 405
Cynanchum arguel - - - *ib.*
Buxus sempervirens - - *ib.*
Colutea arborescens - - *ib.*
Hedge hyssop - - - - *ib.*

Page.

Globularia alypum - - - 406
Globularia vulgare - - - *ib.*
White agaric - - - - *ib.*
Orris root - - - - *ib.*
American blue flag - - - *ib.*
Eupatorium cannabium - - *ib.*

CHAPTER XI.

Laxative Remedies - - 407
Laxative mineral substances - 408
Magnesia - - - - - *ib.*
Sub-carbonate of magnesia - 409
Super-tartrate of potassa - *ib.*
Castor oil - - - - 410
Purging cassia - - - - 411
Tamarind - - - 412
Manna - - - - - 413
Mannite - - - - - 414
Honey - - - - - 415
Mercurialis annua - - - *ib.*
Pale rose - - - - - 416
Peach tree flowers - - - *ib.*
Linum catharticum - - - *ib.*

CHAPTER XII.

Temperant or Refrigerant Medicines - - - - - 417
Refrigerant Mineral Substances - - - - - - - *ib.*
Refrigerant Vegetable Substances - - - - - 418
Vinegar, or Impure acetic acid *ib.*
Tartaric acid - - - - 419
Lemon - - - - - - 420
Orange - - - - - - *ib.*
Citric acid - - - - 421
Red and white currants - - *ib.*
Mulberries - - - - 422
Sorrel - - - - - - *ib.*
Oxalic acid - - - - 423
Salt of sorrel, or bi-oxalate of potassa - - - - - - *ib.*
Strawberries - - - - 424
Raspberries - - - - *ib.*
Cherries - - - - - *ib.*
Apples - - - - - - *ib.*
Pomegranate - - - - *ib.*

CHAPTER XIII.

Demulcent Remedies - - 425
Gum - - - - - 426
Sugar - - - - - - *ib.*
Fecula, or starch - - - *ib.*
Fixed or fatty oils - - - *ib.*

Page.

Animal oils - - - - 427
Gelatin - - - - - - *ib.*
Vegetable Demulcent Substances - - - - - - *ib.*
Gum Arabic - - - - *ib.*
Gum senegal - - - - 428
Common gum - - - - *ib.*
Gum tragacanth - - - *ib.*
Liquorice - - - - *ib.*
Melilot - - - - - 430
Slippery-elm - - - - *ib.*
White or American elm - - 431
Sassafras pith - - - - *ib.*
Marsh mallow - - - - *ib.*
Flowering fern - - - 432
Hollyhock - - - - *ib.*
Mallow - - - - - - *ib.*
Cacao oil, or butter - - - *ib.*
Borrage - - - - - 433
Comphrey root - - - 434
Bugloss - - - - - *ib.*
Spotted lung-wort - - - *ib.*
Hound's tongue - - - *ib.*
Linseed, or Flax seed - - *ib.*
Linseed oil - - - - 435
Sweet almond - - - - *ib.*
Bitter almond - - - - 436
Oil of sweet almond - - *ib.*
Olive oil - - - - - 437
White poppy oil - - - *ib.*
Walnut oil - - - - *ib.*
Sugar - - - - - *ib.*
Sugar maple - - - - 438
Dog grass - - - - 439
Barley - - - - - *ib.*
Rice - - - - - - 440
Oat meal - - - - - *ib.*
Starch, or Amylaceous fecula - 441
Wheat and rye flour - - *ib.*
Bran - - - - - - *ib.*
Salep - - - - - - 442
Sago - - - - - - *ib.*
Tapioca - - - - - *ib.*
Arrow root - - - - *ib.*
Potato fecula - - - - *ib.*
Prunes - - - - - 443
Raisins - - - - - - *ib.*
Figs - - - - - - *ib.*
Dates - - - - - - *ib.*
Jujubes - - - - - *ib.*
Bottle-gourd seeds - - - 444
Pompion seeds - - - *ib.*
Melon seeds - - - - *ib.*
Cucumber seeds - - - *ib.*
Hemp seeds - - - - *ib.*
Quince seeds - - - - *ib.*
Psyllium seeds - - - *ib.*

	Page.
Groundsel	444
Brank ursine	*ib.*
Bulb of white lilly	*ib.*
Leek	*ib.*
DEMULCENT ANIMAL SUBSTANCES	*ib.*
Milk	*ib.*
Whey	445
Isinglass	*ib.*
Glue	*ib.*
Lard	446
Butter	*ib.*
Suet	*ib.*
Wax	*ib.*
Spermaceti	*ib.*
Semen-contra	450
Pink root	*ib.*
Worm-seed, Jerusalem oak	451
Pride of china	452
Cowhage	453
Cabbage tree bark	*ib.*
Virginia goat's rue	454
Ground pink	*ib.*
Samphire, or Sea fennel	*ib.*
Garlic	455
MINERAL VERMIFUGE SUBSTANCES	*ib.*
Tin	*ib.*
Naphtha	456
Petroleum	*ib.*

CHAPTER XIV.

ANTHELMINTIC OR VERMIFUGE SUBSTANCES	448
Corsican worm-weed, Helminthochorton	*ib.*
Male fern	449

TABLE

Of the principal medicinal plants, arranged in the order of their natural families	457
INDEX	497

INDEX.

A.

Page.

Abietis turiones - - - - 215
Absynthii majoris summitates - 194
Acacia vera - - - - - 88
—— *nostras* - - - - *ib.*
Acanthus mollis - - - 444
Acer saccharinum - - - 438
Acetas ammoniæ solutus, A., P., F. 156
—— *cupri crudus* - - - 66
Acetate of lead pills, Paris H. - 84
———— mercury - - - 282
———— potassa - - - 234
———— quinia - - - 122
———— soda - - - 236
Acetated tincture of opium, (simple) Thomas Evans - - 321
————————, (aromatic) - - - - *ib.*
Acetic acid, (impure) - - 418
——— ether - - - - 301
Acetum aromaticum - - - 200
——— *opii*, Dr. Paris - - 321
——— *rutæ*, Pr., A. - - 265
——— *scillæ*, U. S., L., D., E., P. &c. - - - - - 239
——— *vini* - - - - 418
Achillea millefolium - - - 198
——— *ptarmica* - - - *ib.*
Acidulous hydrosulphurous water, P. - - - - - 252
Acidum aceticum camphoratum, D., E. - - - - - 303
——— *aromaticum* - - - 78
——— *aromaticum dilutum*, U. S., L., D., R., F., Den. - - *ib.*
——— *benzoicum* - - - 224
——— *boracicum* - - - 417
——— *citricum* - - - 421
——— *hydrochloricum* - - 162
——— *hydrocyanicum* - - 346
——— *muriaticum* - - - 162
——— *muriaticum dilutum* - 163
——— *nitricum* - - - 160
——— *nitricum dilutum*, L., D., E. 161
——— *oxalicum* - - - 423
——— *succinicum* - - - 316
——— *sulphuricum* - - - 77
——— *sulphurosum* - - - 161
——— *tartaricum* - - - 419

Page.

Aconita - - - - - 343
Aconite - - - - - - 342
Aconitum anthora - - - 343
———— *cammarum* - - *ib.*
———— *lyctotonum* - - *ib.*
———— *napellas* - - - 342
Actea racemosa - - - - 339
Adeps suilli - - - - 445
Adragantin - - - - 429
Ærugo - - - - - - 66
Æsculus hippocastaneum - - 148
Æther aceticus - - - - 301
—— *assafœtida*, P. - - - 305
—— *hydrochloricus* - - - 299
—— *muriaticus* - - - *ib.*
—— *nitricus seu nitrosus* - 300
—— *sulphuricus seu vitriolicus* 298
Æthiops martialis - - - 104
Æthusa cynapium - - - 342
Aix sulphurous springs (in Savoy) 350
Aix-la-Chapelle springs - - *ib.*
———————— artificial mineral water - - - - - - *ib.*
Albany, (new mineral spring) - 377
Albumen - - - - - 427
Alcea rosea - - - - 432
Alcohol - - - - 52 & 295
——— *ammoniatum* - - 67
——— *ammoniatum aromaticum* *ib.*
——— of cinchonia, F. M. - 120
Alcoholic tinctures - - - 53
Alcoholized muriatic acid, P. - 163
Aleppo scammony - - - 381
Aletris farinosa - - - - 135
Algarotti's powder - - - 355
Aloe caballina - - - - 389
—— *hepatica* - - - - *ib.*
—— *perfoliata* - - - - 388
—— *socotorina* - - - - *ib.*
Aloes - - - - - - *ib.*
Allium porrum - - - 444
——— *sativum* - - - 455
Almonds, (bitter) - - - 436
———— (oil of sweet) - - *ib.*
———— (sweet) - - - 435
Althæa officinalis - - - 431
Althææ radix, folia et flores - *ib.*
Alum - - - - - - 79
Alumen - - - - - - *ib.*

	Page.
Alum root	94
Ambarum cineritum	314
Ambergris	*ib.*
Ambragrisea	*ib.*
American blue flag	406
——— centaury	135
——— hellebore	393
——— hemlock	342
——— ipecacuanha	360
——— nightshade	361
——— sanicle	94
Ammoniacal alcoholate of lavender, P.	158
Ammoniæ acetas	155
——— *arsenias*	159
——— *et ferri murias*	107
——— *hydrochloras vel murias*	154
——— *sub-carbonas*	157
Amomum cardamomum	185
——— *zedoaria*	187
——— *zingiber*	185
Amyris elemifera	216
——— *gileadensis*	*ib.*
——— *kataf*	217
——— *opobalsamum*	216
Amygdalæ amaræ	345
——— *dulces*	435
Amygdalus communis	*ib.*
——— (*Var.*)	345
Anchusa italica	434
Anderson's spring, (Bedford)	377
Andromeda arborea	99
——— *mariana*	*ib.*
Anemone nemorosa	75
Anethum fœniculum	204
Angelica archangelica	203
——— (Garden)	*ib.*
——— tree	226
Angelicæ radix, herba, et semina	203
Aniseed	205
Anisum stellatum	176
Anthelmintics	448
Anthemis cotula	196
——— *nobilis*	195
——— *pyrethrum*	196
——— *tinctoria*	*ib.*
Anti-febrile powder of bistort	93
Anti-herpetic powder, (Ferriar)	240
Antimonial powder	355
Antimony, (diaphoretic)	*ib.*
Anti-ophthalmic pills, (Dr. Ammon)	193
Anti-scorbutic juice, P.	191
Anti-spasmodic mixture, (Dr. Paris)	314
———, Paris H.	299
Anti-spasmodics	297
Aperitive mixture, Paris H.	234
Apium graveolens	244
——— *petroselinum*	*ib.*
Apocynum androsæmifolium	363
Apozems	53
Apparatus, (fumigating)	162
Aqua ammoniæ caustica	66
—— *ammoniæ sub-carbonatis*	157
—— *calcis composita*, M.	258
—— *carmælitana*, Den.	201
—— *cinnamomi*	172
—— *cinnamomi cum vino*, R.	*ib.*
—— *cinnamomi vinosa*, Pol.	*ib.*
—— *menthæ piperitæ*, L., E., D., P. &c.	198
—— *menthæ piperitæ vinosa*, R., Pol.	*ib.*
—— *muriatis hydrargyri corrosivi*, F.	277
—— *saturnina*, R., Den., F.	84
—— *sulphatis magnesia cum acido carbonico*, F.	372
Aralia nudicaulis	227
—— *spinosa*	226
Arbutus uva ursi	240
Arcæus balsam, P.	217
Arctium lappa	137
Argemone mexicana	328
Aristolochia longa	188
——— *rotunda*	*ib.*
——— *serpentaria*	187
Armoracia	190
Arnica montana	292
Arnicæ flores et radix	*ib.*
Arrow root	442
Arseniate of ammonia	159
——— soda	*ib.*
Arsenici oxidum album	63
Arsenious acid	*ib.*
Arsenis potassæ aquosus, P.	158
Arsenite of potassa	*ib.*
Artemisia abrotanum	195
——— *absynthium*	194
——— *judaica*	450
——— *pontica*	195
——— *vulgaris*	*ib.*
Artificial camphor	213
Arum maculatum	75
——— *triphyllum*	208
Arundo donax	261
——— *phragmites*	*ib.*
Asarum canadense	189
Asclepias curassavica	367
——— *decumbens*	259
——— *incarnata*	260
——— *syriaca*	*ib.*
——— *tuberosa*	259
——— *vincetoxicum*	260
Asparagin	239

	Page.
Asparagus officinalis	239
Asperula cynanchica	92
Assafœtida	304
Astragalus exscapus	263
——— *gummifer*	428
Astringent apozem, P.	87
——— enema of bistort, Paris H.	98
——— fomentation of bistort	*ib.*
——— gargle	85
——— gargle of alum, Paris H.	80
——— julep, Paris H.	87
——— pills of acetate of lead, (Dr. Paris)	84
——— powder of kino	91
Astringents	76
Atropa belladonna	331
——— *mandragora*	332
Atropia	331
Aurantia curassaventia	209
Aurantii flores	309
——— *folia*	310
Auri chloruretum	283
—— *deutoxidum*	284
—— *et sodii chloruretum*	*ib.*
—— *murias*	283
Aurum	284
Avena sativa	440
Ayapana	140

B.

Bacher's extract of hellebore, P.	395
——— tonic pills, P.	*ib.*
Badian or star anise	176
Bagneres de Luchon sulphurous spring	251
Balaruc water	379
——— artificial mineral water	*ib.*
Ballston sulphurous springs	249
Balm	201
Balsam of Gilead	216
——— Judea	*ib.*
——— Mecca	*ib.*
——— Syria	*ib.*
Balsamum benzoinum seu asadulcis	223
——— *copaiba*	221
——— *judaicum*	216
——— *meccanense*	*ib.*
——— *peruvianum*	220
——— *sulphuris anisatum*, P.	247
——— *storax*	224
——— *syriacum*	216
——— *terebinthinatum*, Den.	247
——— *tolutanum*	220
Balsams	56
Baptisia tinctoria	149
Bardanæ seu lappæ majoris radix	137
Bareges sulphurous springs	251
——— artifical mineral water	*ib.*
Barii chloruretum	285
Barley	439
Bark, (Angustura)	127
——, (Bicoloured)	123
——, (Calisaya)	113
——, (Georgia)	*ib.*
——, (gray or Loxa)	*ib.*
——, (orange)	114
——, (Peruvian)	113
——, (red)	114
——, (St. Lucia)	122
——, (St. Domingo)	*ib.*
——, (white)	115
——, (yellow)	113
Bath, (England,) mineral springs	168
Baths, (hydrosulphurous water for,) P.	253
——, (mercurial,) Paris H.	277
——, (sulphurous,) Paris H.	248
——— and gelatinous, Paris H.	*ib.*
Bdellium	220
Bear's berry	240
Bedford chalybeate spring	110
——— sulphurous spring	149
——— saline spring	377
Beech drops	94
Beef's gall extract	151
Belladonna	331
Belladonnæ herba	*ib.*
Beloste's pills, Paris H.	274
Benet or avens	98
Benzoic acid	224
Benzoin	221
Bestuchef's tonic tincture, P.	117
Beta vulgaris	438
Betel	182
Bi-arseniate of potassa	159
Bi-carbonate of potassa	233
——— soda	235
Bi-oxalate of potassa	423
Big-bone saline springs	378
Bistort root	92
Bistortæ radix	*ib.*
Bitter almonds	345
—— polygala	149
—— sweet	258
Black alder, (European)	399
—— berry, (American)	99
—— berry, (European)	*ib.*
—— drop, U. S., Dr. Paris	321
—— hellebore	395
—— oxide of iron	104
—— oxide of mercury	280
—— pepper	181
—— snake-root	339

	Page.
Black sulphuret of mercury	279
—— wash, New York H.	276
Blue copperas	65
—— lobelia or cardinalis	262
—— vitriol	65
Blistering plaster, P.	71
Blood root	328
Boletus laricis	406
Bolus camphoræ, Guy's H.	303
——, (Dr. Paris's anthelmintic)	276
—— *guaiaci comp.* Guy's H.	255
—— of squill, Paris H.	239
Boluses	56
Boneset	138
Bonnes sulphurous springs	251
—— artificial mineral water	252
Bontius's hydrogogue pills, P.	390
Boracic or boric acid	417
Borax	85
Borrage	433
Borraginis herba et flores	*ib.*
Borrago officinalis	*ib.*
Boswellia serrata	219
Botrophis serpentaria	339
Bottle gourd	444
Boules de Nancy, P.	106
Bourbonne les bains mineral spring	379
—— artificial mineral water	*ib.*
Bran	441
Brandy	296
Brank ursine	444
Brera's iodine ointment	271
Bristol hot-well, (England)	169
Broad-leaved lavender	200
Broom reed	261
Broths, (medicinal)	53
Brucia	291
—— hydrochlorate of	292
—— mixture, F. M.	*ib.*
—— pills, F. M.	*ib.*
—— sulphate of	*ib.*
Bryonia alba	387
Bryoniæ radix	*ib.*
Bryonin	388
Bryony	387
Bubon galbanum	306
Buck bean	138
Buck thorn	398
Bugloss	434
Burdock	137
Burgundy pitch	214
Burnt plaster, P.	83
Butcher's broom	240
Butter	446
—— nut	405
—— of antimony	63
—— or oil of cacao	432
Button wood	184
Butyrum	446
—— *antimonii*	63
—— *or oleum cacao*	432
Buxton, (England) thermal water	169
Buxus sempervirens	405

C.

Cabbage tree bark	453
Cacao oil or butter	432
Cajeput oil	311
Calcareous soap, P.	86
Calcis hydrochloras	285
—— *oximurias*	165
Calcined alum	79
—— magnesia	408
Calendula officinalis	198
Calomel, *Calomelas*	275
Calx	85
Camphor, *Camphora*	301
——, (artificial)	213
Camphorata	227
Camphorated bolus, Paris H.	303
—— enema, Paris H.	*ib.*
—— liniment of cantharides, P.	71
Camphorosma monspeliaca	227
Canada flea-bane	242
—— or fir balsam	211
—— snake-root	189
Cancer root	94
Canella alba	173
Cantharis vesicatoria	69
Cantharides	*ib.*
Cantharidin	70
Caper plant	244
Capparis spinosa	*ib.*
Capsici baccæ	179
Capsicin	180
Capsicum annuum	179
——, (Dr. Conwell's ethereal oil of)	180
Caraway seeds	205
Carbonization	49
Cardamom, (small)	185
—— (great and middle)	186
Cardamomum minus	185
Cardui benedicti vel *santi herba*	138
Carduus benedictus	*ib.*
Carex arenaria	263
Caribbee bark	122
Carrot root	206
Carum carvi	205
Caryophyllæ radix	98
Caryophylli	178
Caryophyllus aromaticus	*ib.*
Cascarilla bark	174
—— *fina*	113

	Page.
Cascarillæ cortex	174
Cassia fistula	410
—— *lignea*	173
—— *marylandica seu riparia*	404
—— *sennæ*	402
Cassine caroliniana	242
Castor, *Castoreum*	313
—— oil	410
Castorin	313
Cataplasm, (anodyne,) Paris H.	322
Cataplasma sinapeos, D.	74
—— *sinapis*, E.	*ib.*
Cataplasms	56
Catapucia oil	397
Catechu	86
—— Bengal	87
—— Bombay	*ib.*
—— in masses	*ib.*
Cathartin	402
Caustic camphorated volatile liniment, Paris H.	67
—— kali with lime	60
—— liquor of ammonia	66
—— potassa	60
—— soda	*ib.*
—— substances	60
—— water of ammonia	66
Cauterets sulphurous springs	252
—— artificial water	*ib.*
Cayenne pepper	179
Centaurea benedicta	138
Centaurii minoris summitates	134
Centaury, (American)	135
——, (European)	134
Cephaelis ipecacuanha	356
Cera	446
Cerasus lauro-cerasus	344
Cerasus vulgaris	424
Cerates	56
Ceratum æruginis, Pr., Den.	66
—— *cantharidum*, U. S.	71
—— *cinchonæ*, P.	119
—— *fuscum*, A.	83
—— *plumbi acetatis*, L., Den.	84
—— *sabinæ*, U. S.	265
—— *saponis*, U. S.	237
Cerusa	84
Cevadilla	394
Chalybeate wine, P.	104
Chamæmeli romani flores	195
—— *vulgaris flores*	198
Chamomile, (common)	*ib.*
——, (Roman)	195
Chelidonium majus	75
Cheltenham spring, (England)	110
Chenopodium ambrosioides	228
—— *anthelmintioum*	451
—— *botrys*	228
Chenopodium vulvaria	312
Cherries	424
Cherry laurel	344
Chervil	206
Chimaphila umbellata	240
China root	257
Chio or Chian turpentine	209
Chiretta or chirayta	134
Chironia angularis	135
—— *centaurium*	134
Chloride of antimony	63
—— barium	285
—— gold	283
—— gold and sodium	284
—— lime	165
—— potassa	167
—— soda	166
Chlorine, *chlorina*	163
Cichorii herba et radix	141
Cichorium intybus	*ib.*
Cinchona	113
Cinchonia	119
—— (sulphate of)	*ib.*
Cicuta maculata	342
—— *virosa*	*ib.*
Cicutæ majoris herba	340
Cimicifuga serpentaria	339
Cinnabar	278
Cinnamon bark	171
Cinnamomi cortex	*ib.*
Cissampelos pareira	244
Cistus creticus	225
Citric acid	421
Citrus aurantium	208
—— *medica*	208 & 402
Civet	314
Clarification	50
Clavus secalinus	267
Clematis vitalba	75
Cloves	178
Clove bark	173
Cocculus palmatus	129
Cochlearia officinalis	191
—— *armoracia*	190
Cockspur pepper	179
Cocoloba uvifera	91
Codaga pala	151
Coffea arabica	189
Coffee	*ib.*
Coffein	*ib.*
Colchicum autumnale	340 & 392
Collyria	55
Collyrium (anodyne) Paris H.	322
——, (astringent,) Paris H.	82
—— of alum, Paris H.	80
—— of sulphate of zinc, P.	82
—— opiatum, P.	322

	Page.
Collyrium resolvent of acetate of lead, Paris H.	84
Colocynth	385
Colocynthida	*ib.*
Colocynthidis fructus	*ib.*
Colocyntin	*ib.*
Colombæ radix	129
Colombia	*ib.*
Colophony, *colophonia*	214
Coltsfoot	141
Columbo, (American)	133
——— (East India)	129
——— (false)	130
Common elm tree, (European)	263
——— field scabious	*ib.*
——— holly	148
——— lilac	149
——— polygala	193
Comphrey root	434
Comptonia asplenifolia	95
Concrete volatile alkali	157
Confectio aromatica, L., D.	172
——— *catechu*, P., D.	87
——— *opii*, L.	321
——— *rosæ caninæ*, L.	97
——— *rosæ gallicæ*, U. S.	95
——— *rosæ gallicæ*, L., E., D.	97
——— *scammonii*, L.	382
——— *sennæ*, U. S.	403
——— *sennæ composita*, Guy's H.	404
Confections	55
Congress spring, (Saratoga)	375
Coniin	340
Conium maculatum	*ib.*
Conserva cochleariæ	192
Contrayerva	184
Convolvulus arvensis	384
——— *jalapa*	380
——— *mechoacan*	382
——— *panduratus*	383
——— *scoparius*	263
——— *sepium*	384
——— *soldanella*	*ib.*
——— *turpethum*	383
Copaiba balsam	221
Copaifera officinalis	*ib.*
Coptis trifoliata	150
Coriander seed	206
Coriandrum sativum	*ib.*
Cornia	125
Cornus florida	123
——— *sericea*	124
——— *circinalis*	*ib.*
Corrosive sublimate	276
——— pills, Paris H.	*ib.*
Corsican worm-weed	448
Cortex angusturæ	127
——— *aurantiorum*	209
Cortex cinnamomi	171
——— *gnidii*	73
——— *hippocastani*	148
——— *lauri cinnamomi*	171
——— *lauri culilawan*	173
——— *limoni*	209
——— *mezerei*	73
——— *peruvianus*	113
——— *pruni virginiani*	343
——— *pseudo angusturæ*	291
——— *roboris*	88
——— *salicis*	144
——— *simarubæ*	127
——— *winteri*	175
Cow-bane	342
Cowhage	453
Coxe, (Dr.) hive syrup	193
Cream of tartar	409
Cremor tartari	*ib.*
Crenate diosma or Bechu	243
Crocus antimonii	355
——— *metallorum*	*ib.*
——— *sativus*	266
Croton cascarilla	174
Crown bark	113
Cucumber	444
Cucumis melo	*ib.*
——— *sativus*	*ib.*
Cucurbita lagenaria	444
——— *pepo*	*ib.*
Cuisinier's syrup	257
Cumin seed	206
Cuminum cyminum	*ib.*
Cunila pulegioides	269
Cupri sulphas	65
——— *sulphatis liquor*, U. S.	68
Cuprum aluminatum, Pol.	66
Curassoa oranges	209
Curcuma longa	187
Currant, (red and white)	421
Cusparia febrifuga	127
Cyanuret of potassium	348
——— of zinc	349
Cyanuretum potassii	348
——— *zinci*	349
Cynanchum arguel	405
——— *ipecacuanha*	367
——— *tomentosum*	369
Cynoglossum officinale	434
Cyperus longus et rotundus	263
Cyprus grass, (long and round)	*ib.*

D.

Dandelion	142
Daphne gnidium	73
——— *laureola*	*ib.*
——— *mezereum*	*ib.*

Page.

Darmstrong's tincture of colchicum, P. - - - - - 393
Datura stramonium - - - - 332
Daturia - - - - - - 333
Dates - - - - - - - 443
Daucus carota - - - - - 206
Decoction - - - - - - 52
——— (compound) of bark, P. 118
——— (compound) of dandelion, Stoll - - - - - 143
——— (compound) of elecampane, Paris H. - - - 141
——— (narcotic) Paris H. - 323
——— *anthemidis nobilis*, E., D. 196
——— *anti-venereum ulysseponense*, B. - - - - - 256
Decoctum cinchonæ, U. S., E., L., D., P. - - - - - - 118
——— *colombæ compositum*, U. S. - - - - - - - 130
——— *geoffrææ inermis* - 454
——— *guaiaci*, U. S., E., P., &c. 254
——— *mezerei*, U. S., D. - 73
——— *papaveris*, L. - - - 323
——— *Pollini*, B. - - 256
——— *quercus roboris*, E. - 89
——— *sarsaparillæ*, U. S., E., L., D. - - - - - - 256
——— *sarsaparillæ compositum*, or Lisbon diet drink, U. S., D., L. - - - - - - *ib.*
——— *sarsaparillæ cum mezereo*, B. - - - - - - - 257
——— *senegæ*, U. S., L., P. 193
——— *zitmanni fortius*, B. - 257
——— *zitmanni mitius* - *ib.*
Demulcent animal substances - 444
Demulcents - - - - - 425
Denarcotized laudanum - - 322
Detersive gargle, Paris H. - 85
Deutiodide of mercury - - 278
Deuto-chloride of mercury - 276
Deuto-sulphate of copper - 65
Deutoxide of arsenic - - - 63
——— mercury - - - 64
——— lead - - - - 83
——— gold - - - - 284
Dew-berry - - - - - 99
Dewees', (Dr. W. P.) cardinal rules for the use of *secale cornutum* - - - - - - 268
Diacodium, (syrup) P., L. - 323
Dianthus caryophyllus - - 263
Digestion, (pharmacy) - - 52
Digitalis purpurea - - 243 & 337
Digitalin - - - - - 337
Dill seed - - - - - - 205
Diosma crenata - - - - 243

Page.

Diospyros virginiana - - 92
Dippel's animal oil - - - 316
Dirca palustris - - - - 73
Distillation - - - - - 51
Distilled water - - - - *ib.*
Dittany - - - - - 202
Diuretic animal substances - 230
——— mineral substances - 231
——— mixture, Paris H. - 239
——— powder, (Dr. Paris) - *ib.*
——— vegetable substances - 238
Dock - - - - - - 145
Dog-wood - - - - - 123
—— bane - - - - - 363
—— grass - - - - - 439
Dolichos pruriens - - - 453
Dorstenia contrayerva - - 184
Dose for an adult, &c. - - 36
Dover's powder - - - 320
Dracuntium fœtidum - - 307
Dragon's blood - - - 87
Drops, &c., (table of) - - 45
Drymis winteri - - - - 175
Dublanc's spiritus olei copaibæ 223
——— mixture of oil of copaiba 223
Dupuytren's dry collyrium - 81
——— eye salve - - 65
Durand's emulsion of oil of copaiba 223

E.

Eau de Luce - - - - - 67
— de Rabel - - - - - 78
— de vie allemande, P. - - 381
East India fly - - - - - 72
Ecbalium elaterium - - - 386
Effervescent draught, (Dr. Paris) 233
——— julep, (Dr. Paris) *ib.*
Egyptiac ointment, Pr. - - 66
Elaterium - - - - - 386
Elaterii fructus - - - *ib.*
Elatin - - - - - - 387
Elecampane - - - - 140
Electuaries - - - - - 55
Electuarium aromaticum, E. - 172
——— *astringens opiatum*, P. - - - - - - 321
——— *catechu compositum*, E. 87
——— *croci*, P. - - 266
——— *lenitivum*, P. - - 403
——— *opiatum*, E. - - 321
——— *polypharmacum opiatum* seu *theriaca* - - - 321
——— *sennæ compositum*, E. 403
——— *sennæ compositum*, Guy's H. - - - - - 404
——— *sennæ*, F., Pol., Pr. *ib.*
——— *sulphuris compositum*, Guy's H. - - - - - 410

Page.

Electuary, (Dr. Paris's laxative) 246
Electuary, (anthelmintic,) Paris H. 456
Elixir balsamico-stomachicum Hoffmanni 118
——— *salutis* 404
———, (Peyrilhe's) 131
Elixirium ad scrofulas *ib.*
Elm, (slippery) 430
——, (white or American) 431
Emetia 358
——— syrup, F. M. 359
——— (coloured) *ib.*
——— lozenges *ib.*
——— impure *ib.*
Emetics 350
Emeto-anodyne mixture, Paris H. 322
Emplastrum ammoniaci, U. S., L., E., Den., Pol., Pr., F., A., Guy's H. 306
——— *ammoniaci cum hydrargyro*, L. *ib.*
——— *aromaticum*, Pr., Pol. 179
——— *aromaticum*, D. 219
——— *assafœtidæ*, U. S., E. 305
——— *cantharidis*, L., E., D. 71
——— *fœtidum*, Pr., Pol., F. 305
——— *hydrargyri*, U. S., A., R. 275
——— *hydrargyri compositum* *ib.*
——— *opiatum*, Pr. 322
——— *opii*, L., E. *ib.*
——— *plumbi*, U. S., E., L., D. 83
——— *resinosum cantharidum*, U. S. 71
——— *roborans*, B. 81
——— *saponatum*, Pr., Pol., B., R. 237
——— *saponis*, L., D., E., P. 237
——— *tartratis potassæ stibiatæ*, B. 352
Emulsio ammoniaci, F. 306
——— *amygdali communis*, E. 436
——— *camphoræ*, E., P. 303
Emulsion (Dr. Paris's expectorant) 306
——— of nitrate of potassa, Guy's H. 234
——— of turpentine, Paris H. 213
Emulsions 54
Enema, (antiseptic,) of bark, Paris H. 119
——— *assafœtidæ*, New York H., Paris H., Guy's H. 305
———, (astringent,) of bistort 93

Page.

Enema opii, New York H., Guy's H., Dr. Paris 322
Enghien sulphurous springs 253
Epidendrum vanilla 176
Epispastics 69
Epsom salt 371
——— water 379
Ergot 267
Ergotism *ib.*
Erigeron canadense 242
——— *heterophyllum* *ib.*
——— *philadelphicum* *ib.*
Eryngium aquaticum 184
Erythræa centaureum 134
Esculin 148
Essentia amara, Den. 194
Essential oil of copaiba 222
Ethereal tinctures 53
Ethers, (different kinds of) 298
Ether, (nitric or nitrous) 300
Eucalyptus resinifera, (note) 91
Eugenia caryphyllata 178
Eupatorium ayapana 140
——— *cannabinum* 406
——— *perfoliatum* 138
——— *pilosum* 140
——— *teucrifolium* *ib.*
Eupatoria 139
Euphorbium 74
Euphorbia corollata 360
——— *cyparisias* 367
——— *gerardiana* *ib.*
——— *ipecacuanha* 359
——— *lathyris* 397
——— *sylvatica* 367
Evans's (Mr. T.) process for preparing the black oxide of mercury 280
Evergreen cassine 242
Excitants 152
Expectorant powder, Paris H. 239
Extracts, (what is meant) 51
Extractum absynthii, L., P. 195
——— *angelicæ*, A., Pol. 204
——— *angusturæ*, B. 128
——— *anthemidis* 196
——— *arnicæ* 293
——— *calami* 207
——— *cascarillæ*, D., Pr., &c. 175
——— *corticis salicis* 145
——— *dulcamaræ*, Pol., Pr. 259
——— *enulæ*, P., A. 141
——— *fellis tauriui* 151
——— *florum chamæmeli* 196
——— *gentianæ* 131
——— *hæmatoxyli*, L. 88
——— *helenii*, P., Pol., B. 141
——— *hellebori nigri*, E., D. 395

Page

Extractum humuli - - - 144
——— *ligni guaiaci*, A., Pr., Pol. - - - - - - 254
——— *opii*, L., E., Pol., Pr., &c. - - - - - - 320
——— *opii aquosum*, P., D. *ib.*
——— *opii gummosum*, B. - *ib.*
——— *quassiæ*, R., Pol., A. 127
——— *rhei*, P., Pol., F., Pr., L. - - - - - - 401
——— *rhei compositum*, Pol., Pr., Den. - - - - *ib.*
——— *sabinæ*, D. - - 265
——— *sarsaparillæ*, L. - 257
——— *seu mellago taraxaci* 143
——— *taraxaci*, L., D., F., R. 143
——— *trifolii aquatici*, A., P., F., Pol., Den., B. - - 137

F.

Faba indica seu semen ignatia - 289
False angustura bark - - 291
—— sarsaparilla root - - 227
—— Winter's bark - - - 173
Febrifuge boluses, Paris H. - 155
Fecula - - - - 426 & 441
——— (potato) - - - 442
——— *sagu* - - - - *ib.*
——— *tapioka* - - - - *ib.*
Feltz's drink, Paris H. - - 256
Fennel seed - - - - 204
Ferri arsenias - - - - 160
—— *murias sublimatus* - - 106
—— *oxidum nigrum* - - 104
—— *scobs seu limatura* - - 103
—— *sub-carbonas* - - - 105
—— *sulphas* - - - - 80
Fern, (flowering) - - - 432
——, (male) - - - - 449
Ferula assafœtida - - - 304
——— *persica* - - - - 306
Fever few - - - - 197
——— root - - - - 385
Ficus caricæ - - - - 443
Figs - - - - - - *ib.*
Filicis maris radix - - - 449
Filtration - - - - - 50
Fir buds - - - - - 215
Flax-seed - - - - 434
Fletcher's spring, (Bedford) - 378
Flores benzoes - - - - 224
——— *tiliæ* - - - - 310
Flowers of zinc - - 81
——— sulphur - - - 245
Flux root - - - - 259
Fly, (East India) - - - 72
——, (potato) - - - - 71

Page.

Fly, (Spanish) - - - - 69
Fœniculi fructus - - - 204
Folia uva ursi - - - - 240
——— *bechu* - - - - 243
Fomentations - - - - *55*
——— (astringent) of bistort - - - - - - 93
——— (sedative) Paris H. 323
Forges' springs - - - 112
Fragaria vesca - - - - 424
Frasera caroliniensis - - - 133
——— *walteri* - - - *ib.*
Fructus carvi - - - - 205
——— *cumini* - - - 206
——— *piperis cubebæ* - - 183
——— *piperis nigri* - - 181
Fucus helminthochorton - - 448
Fumigating apparatus - - 162
Fumariæ herba - - - 146
Fumaria officinalis - - - *ib.*
Fumitory - - - - *ib.*

G.

Galangæ majoris et minoris radix 187
Galangal - - - - - *ib.*
Galbanum - - - - 306
Galega virginiana - - - 454
Gallæ turcicæ - - - - 90
Gallicum verum - - - 92
Gallipœa febrifuga - - - 127
Gall nuts - - - - - 90
Gamboge - - - - 391
Garden patience - - - 145
——— nightshade - - . 259
Gargarisma potassæ nitratis, New York H. - - - - - 234
Gargles - - - - - *55*
Gargle, (anti-scorbutic,) Paris H. 191
———, (astringent) of galls, Paris H. - - - - - - 85
———, (detersive,) Paris H. - 163
———, (detersive,) of borax, Paris H. - - - - - - 85
———, (muriatic,) Paris H. - 163
———, (resolvent,) Paris H. - 155
———, (stimulant,) of capsicum 180
Garlic - - - - - 455
Gaultheria procumbens - - 241
Gelatin - - - - - 427
Gelatina - - - - - *ib.*
Gemmæ populi - - - 225
Gentian - - - - - 130
——— blue - - - - 133
Gentiana acaulis - - - 132
——— *catesbæi* - - - 133
——— *chiryata* - - - 134
——— *lutea* - - - - 130

	Page.
Gentiana punctata	132
——— *purpurea*	*ib.*
——— *saponaria*	133
Gentianæ radix	130
Gentianin	132
Gentia, (see note)	*ib.*
Geoffroya inermis	453
Geranium maculatum	93
Geum rivale	98
——— *urbanum*	*ib.*
Gillenia trifoliata	360
——— *stipulacea*	361
Ginger	185
Gingiberis radix	*ib.*
Ginseng	227
Glass of antimony	355
Glauber's salt	370
Globuli martiales, A., Den., Pr.	106
Globularia alypum	406
——— *vulgare*	*ib.*
Glue	445
Glycyrrhiza glabra	429
Glycyrrhizin	*ib.*
Golden sulphuret of antimony	353
Gold, (metallic)	284
—— thread	150
Gondret's ammoniacal caustic	67
Goulard's extract	84
Grains of paradise	186
Gramen caninum	439
Gratiola officinalis	405
Gray oxide of mercury	281
Green copperas	405
—— vitriol	80
—— epispastic ointment, P.	71
Ground pink root	454
Groundsel	444
Grutum	440
Guaiacin	254
Guaiacum	*ib.*
——— *officinale*	*ib.*
——— wood	*ib.*
Gum ammoniac	305
—— arabic	427
—— (common)	428
—— kino	91
—— senegal	428
—— tragacanth	*ib.*
Gummi arabicum	427
——— *kino seu gambiense*	91
——— *nostras*	428
——— *senegalense*	*ib.*
——— *resina ammoniacum*	305
——— *resina assafœtida*	304
——— *resina bdellium*	220
——— *resina euphorbium*	74
——— *resina galbanum*	306
——— *resina gutta*	391
Gummi resina myrrha	217
——— *resina olibanum seu Thus*	219
——— *resina sagapenum*	306
——— *resina scammonium*	381

H.

	Page.
Hæmatoxylum campechianum	88
Hahnemann's pills, Paris H.	281
Hamamelis virginiana	99
Hare's, (Professor) process for denarcotizing opium	322
Harrogate springs, England	249
Hartfell chalybeate water	111
Haustus camphoræ, Guy's H.	303
——— *opiatus*, Guy's H.	322
——— *salinus*, Guy's H.	232
Hedeoma pulegioides	269
Hedge hyssop	405
Helleborus fœtidus	395
——— *trifolius*	150
Hellebore, (green)	395
Helminthochorton	448
Hemlock	340
Hemp, (the seed)	444
Henbane	334
Henricea pharmacearcha	134
Herba trifolii fibrini	136
Herniaria glabra	244
Heuchera americana	94
——— *viscida*	*ib.*
Hive syrup, (Dr. Coxe's)	193
Hollyhock	432
Holy thistle	138
Honey	415
Honey of roses, L., D.	97
Hops	143
Hordeum vulgare	439
Horehound	202
Horse-chesnut bark	148
—— mint	269
—— radish	190
Hound's tongue	434
Humulus lupulus	145
Hydrargyri acetas	282
——— *cum rheo*, Guy's H.	274
——— *cyanuretum*	279
——— *deuto-chloruretum*	276
——— *deuto-ioduretum*	278
——— *proto-chloruretum*	275
——— *proto-iodurctum*	277
——— *proto-nitras*	281
——— *nitrico-oxidum*	64
——— *oximurias*	276
——— *rubrum oxidum*	64
——— *submurias mitis sive calomelas*	275
——— *sulphuretum nigrum*	279
——— *sulphuretum rubrum*	278

Page.

Hydrargyrum cum creta, L. - 274
——— *cum magnesia*, D. *ib.*
Hydrastis canadensis - - 150
Hydriodas potassæ - - - 271
Hydriodate of potassa - - *ib.*
Hydriodated mineral waters - 272
Hydrochlorate of ammonia - 154
——— brucia - - 292
——— iron and ammonia - - - - - 107
——— lime - - 285
——— peroxide of iron 107
——— platinum & soda 285
Hydrochloric acid - - - 162
——— ether - - - 299
Hydrocyanic acid - - - 346
Hydrosulphuretum luteum stibii sulphuratum - - - - 353
Hyosciama - - - - 335
Hyosciamus albus - - - *ib.*
——— (alcoholic extract of) Paris H. - - - - *ib.*
——— *aureus* - - - *ib.*
——— *niger* - - - 334
——— pills, Dr. Paris - 335
Hyssopi folia et summitates - 201
Hyssop - - - - - *ib.*
Hyssopus officinalis - - - *ib.*

I.

Iceland moss - - - - 147
Isica icicariba - - - - 216
Ichthyocolla - - - - 445
Ictoides fœtidus - - - 307
Ilex aquifolium - - - 148
——— *vomitoria* - - - - 242
Ilicium anisatum - - - 176
Imperatoria ostruthium - - 207
Impure acetate of copper - - 66
——— hydrate of protoxide of potassium - - - - 60
Indian physic - - - - 360
——— sage - - - - 138
——— tobacco - - - - 362
——— turnip - - - - 208
Infusion - - - - - 52
Infusum angusturæ, U. S. - 127
——— *anthemidis*, U. S., L., E. 196
——— *armoraciæ compositum*, L., P. - - - - - 191
——— *aurantii compositum*, L. 209
——— *caryophyllorum*, L. - 178
——— *cascarillæ*, U. S., L. - 174
——— *catechu compositum*, L., E. 87
——— *cinchonæ*, U. S., L., E., D. - - - - - - 118
——— *cinchonæ cum aqua calcis*, U. S. - - - - - - *ib.*

Page.

Infusum cinchonæ cum magnesia, U. S. - - - - - - 118
——— *colombæ*, U. S., E., L. - 130
——— *cuspariæ*, L. - - 128
——— *gentianæ compositum*, U. S., E., L., D. - - - 131
——— *nicotianæ Fowleri*, B. - 334
——— *quassiæ*, U. S., L., E. 126
——— *quassiæ cum sulphate zinci*, U. S. - - - - - 127
——— *rhei*, New York H. - 401
——— *rhei aquasum*, R., F. - *ib.*
——— *rhei boraxatum*, Pol., Pr. *ib.*
——— *rhei cum alkali*, A. - *ib.*
——— *rosæ compositum*, U. S., L., D., E. - - - - - 78
——— *rosæ compositum*, U. S., L., D. - - - - - - 97
——— *rosæ gallicæ*, E. - - *ib.*
——— *sennæ*, F., D., E. - 403
——— *sennæ compositum*, U. S., L. - - - - - - *ib.*
——— *sennæ compositum*, E., Den. - - - - - - *ib.*
——— *sennæ et tamarindi*, U. S., D. - - - - - - *ib.*
——— *simarubæ*, L. - - 127
Injections - - - - - 55
Injection, (astringent) of oak bark - - - - - - 89
——— of cubebs for blennorrhœa, W. Chevallier - - 184
——— (turpentine) Paris H. 214
Inula helenium - - - - 140
Iodine - - - - - 270
——— ointment, Brera - - 271
Iodinum - - - - - 270
Ioduretted ointment of hydriodate of potassa, F. M. - - - 272
——— solution of hydriodate of potassa, F. M. - - - *ib.*
——— sulphuric ether, F. M. 271
Ionide - - - - - 366
Ionidium ipecacuanha - - *ib.*
Ipecacuanha, (American) - 360
——— (ionidium) - - 366
——— lozenges - - 357
——— (officinal or annular) 356
——— spurge - - 359
——— (viola) - - 366
——— (white) - - 357
Iris florentina - - - - 406
—— *germanica* - - - - *ib.*
—— *pseudo-acorus* - - - *ib.*
—— *versicolor* - - - - *ib.*
Iron filings - - - - 103
—— lozenges, P. - - - 104
—— lozenges, Paris H. - - *ib.*

Page.

Isinglass - - - - - - 445
Issue paper, P. - - - - 71

J.

Jadelot's, (Dr.) anti-psoric liniment, P. - - - - - 248
Jalap - - - - - - 380
Jalapæ radix - - - - - *ib.*
Jalapin - - - - - - *ib.*
James' powder, or *Pulvis antimonialis* - - - - - - 355
Jamestown weed - - - - 332
Jatropha curcas - - - - 397
——— *gossypifolia* - - - *ib.*
——— *manihot* - - - - 442
——— *multifida* - - - - 397
Javelle's water - - - - 167
Jellies - - - - - - - 51
Jerusalem oak - - - - - 451
Juglans cinerea - - - - 405
Jujubes - - - - - - 443
Juleps - - - - - - - *55*
Julepum potassæ sub-carbonatis, Guy's H. - - - - - 232
——— *potassæ nitratis*, Guy's H. 234
——— *salinum*, Guy's H. - 232
——— *succi limonum*, Guy's H. 420
Juniper - - - - - - 215
Juniperus communis - - - *ib.*
——— *lycia* - - - - 219
——— *sabina* - - - - 265
——— *virginiana* - - - *ib.*

K.

Krameria triandra - - - 90
Kermes mineral - - - - 352
——— and camphor bolus, Paris H. - - - - - - 353

L.

Labaraque's liquor - - - 166
Labdanum, Ladanum - - 225
Lac - - - - - - - 444
— *assafœtidæ*, D. - - - 304
Lactuca sativa - - - - 336
——— *virosa* - - - - *ib.*
Lactucæ virosæ herba - - *ib.*
Lactucarium - - - - 337
Laennec's (Dr.) contra-stimulant apozem, Paris H. - - - 352
Laffecteur's anti-syphilitic rob - 257
Lapis causticus - - - - 60
——— *divina*, P. - - - 66
——— *infernalis* - - - 62
Lard - - - - - - 446
Large flowering spurge - - 360
Laurus cassia - - - - 173
——— *cinnamomum* - - 171

Page.

Laurus nobilis - - - - - 173
——— *sassafras* - - 257 & 431
Lavandula spica - - - 200
——— *stœchas* - - - 201
——— *vera* - - - - 200
Lavender, (garden) - - - *ib.*
———, (French) - - - *ib.*
———, (spike) - - - 201
Laxative remedies - - - 407
Leather wood - - - - - 73
Leek - - - - - - 444
Lemon - - - - - - 420
——— peel - - - - - 209
Lettuce, (strong-scented) - 336
Lichen aphtosus - - - 148
——— *islandicus* - - - 147
——— *pulmonarius* - - - *ib.*
——— *pyxidatus* - - - *ib.*
Lignum campechianum - - 88
——— *guaiaci* - - - 254
——— *sanctum* - - - *ib.*
Lilium candidum - - - 444
Lilly, (bulb of white) - - *ib.*
Lime - - - - - - 85
Lime tree flowers - - - 210
Lime-water - - - - - 86
Linctus oleosus, Guy's H. - 437
Liniment, (Dr. Jadelot's anti-psoric) - - - - - - 248
———, (mercurial,) Paris H. 274
———, (resolvent,) Paris H. 304
Liniments - - - - - 56
Linimentum æruginis, L., D. - 66
——— *ammoniæ*, U. S. - 67
——— *ammoniæ et antimonii tartarisati*, U. S. - 67 & 352
——— *ammoniæ fortius*, L. 67
——— *ammoniæ sub-carbonatis*, L. - - - - - - 157
——— *anodynum*, U. S. - 322
——— *aquæ calcis*, U. S., E., D. - - - - - - 86
——— *camphoræ*, U. S., L., D., Den. - - - - - 286
——— *camphoræ comp.*, L. 67
——— *hydrargyri*, L. - 274
——— *saponis comp.*, U. S., L. - - - - - - 237
——— *saponis cum opio*, U. S., New York H. - - - - *ib.*
——— *saponis et opii*, E., P., &c. - - - - - - 322
——— *terebinthinaceum* - 214
Linseed - - - - - - 434
——— oil - - - - - *ib.*
Linum catharticum - - - 416
——— *usitatissimum* - - 434
Liquid pitch - - - - - 215

Page.

Liquid sub-acetate of lead - 84
Liquidambar asplenifolium - 95
Liquiritiæ radix - - - 429
Liquor acidus Halleri, A. - - 78
——— *aluminis compositus* - 80
——— *ammoniæ anisatus*, Pr., Pol. - - - - - - 67
——— *ammoniæ causticus* - 66
——— *antimonii opiatus*, Guy's H. 322
——— *arsenicalis*, L. - - 159
——— *arsenicalis Fowleri* - *ib.*
——— *calcis muriatis*, L. - - 286
——— *hydrargyri oximuriatis*, U. S. - - - - - - 277
——— *kali acetatis*, Pr. - - 235
——— *kali carbonatis* - - 232
——— *myrrhæ*, Pr., Pol., Den. 218
——— *plumbi sub-acetatis*, L. - 84
——— *potassæ*, L., E., D., P. - 61
——— *potassæ arsenitis* - - 159
——— *potassæ carbonatis* - - 232
——— *seu aqua calcis*, U. S., L., E., &c. - - - - - - 86
——— *sub-carbonatis ammoniæ*, L., E., Pol. - - - - 157
——— *sub-carbonatis potassæ*, L. 232
———, (Van Swieten's) P. - 277
Liquorice root - - - - 429
Liriodendron tulipifera - - 175
Litharge - - - - - - 82
Lithargyrum - - - - *ib.*
Lobelia cardinalis - - - 263
——— *inflata* - - - - 362
——— *syphilitica* - - - 262
Logwood - - - - - 88
Looch, (calming) Paris H. - 322
——— with the yolk of eggs, P. 437
Loochs - - - - - - *55*
Lotio hydrargyri muriatis, New York H. - - - - - 276
——— *hydrargyri nigra*, New York H. - - - - - - *ib.*
Lotion, (anti-psoric) P. - - 248
———, (mercurial) Paris H. - 276
———, (refrigerant) - - 156
———, (resolvent) - 155 & 303
———, (stimulating) - - 155
———, (sulphurous) P. - - 246
———, (sulphuro-saponaceous) P. - - - - - - 247
Lotions - - - - - - *55*
Lozenges, (digestive) F. M. - 236
———, (ipecacuanha) P. - 355
Lowe's well, Ballston - - 375
Lunar caustic - - - - 62
Lupuli fructus, seu coni - - 143
Lupulin - - - - - - 144
——— ointment - - - *ib.*

Page.

Lytta aratra - - - - 71
——— *cinerea* - - - - *ib.*
——— *gigas* - - - - 72
——— *marginata* - - - 71
——— *nutalli* - - - - 72
——— *vesicatoria* - - - 69
——— *vittata* - - - - 71

M.

Mace - - - - - - 178
Maceration - - - - - *52*
Madder root - - - - 91
Magnesia - - - - - 408
Magnesiæ sub-carbonas - - 409
——— *sulphas* - - - 371
Malabar cinnamon - - - 173
Male fern - - - - 449
Maleguetta - - - - 186
Mallow - - - - - 432
Malva sylvestris - - - *ib.*
Mandrake root - - - 332
Maniguetta - - - - 186
Manna - - - - - 413
Mannite - - - - - 414
Maranta arundinaceæ - - 442
——— *galanga* - - - 187
——— *indica* - - - - 442
Marc, (Dr.) mineral water - 81
Marrubium vulgare - - - 202
Marsh mallow - - - - 431
——— rosemary - - - 95
——— smallage - - - 307
——— trefoil - - - - 136
Master-wort - - - - 207
Mastiche - - - - - 218
Masticin - - - - - *ib.*
Materia medica, (definition of) 17
Matricaria parthenium - - 197
May apple - - - - 384
——— weed - - - - 196
Meadow saffron - - - 392
Mealy star-wort - - - 135
Measures of capacity - - 44
Mechoacan - - - - 382
Medicated honey - - - *54*
——— oils - - - - *ib.*
——— vinegars - - - *ib.*
——— wines - - - - *53*
Mel - - - - - 415
——— *boracis*, L. - - - - 85
——— *scillæ*, P. - - - - 239
——— *scillæ acetatum*, U. S., L., D., Den., P., &c. - - - *ib.*
——— *scillæ compositum*, Dr. Coxe, U. S. - - - - - 193
Melaleuca cajeput - - - 311
——— *leucadendron* - - *ib.*
Melampodium helleborus niger - 395

Page.

Melia azedarach - - - 452
Melilot - - - - - 430
Melilotus officinalis - - - *ib.*
Mellita - - - - - 54
Meloe vesicatorius - - - 69
Melon - - - - - 444
Melted nitrate of silver - - 62
Mentha piperita - - - 198
Menyanthes trifoliata - - 136
Mercurial ether, (Dr. Cheron) - 277
——— liniment, Paris H. - 274
——— pills, Paris H. - - *ib.*
Mercurialis annua - - - 415
Mercury - - - - - 273
Mexican tea - - - - 228
Mezereon - - - - - 73
——— ointment, P. - - *ib.*
Milfoil - - - - - 198
Milk - - - - - 444
Millefolii herba et flores - - 198
Mimosa nilotica - - - 427
Mineral alkali - - - - 235
Mineral spring of Aix in Savoy 250
——— Aix-la-Chapelle - *ib.*
——— Aumale - - 112
——— Bagneres de Luchon - - - - - 251
——— Bareges - - *ib.*
——— Bath, England - 168
——— Bath, near Bristol, Pa. - - - - - 112
——— Bedford chalybeate 110
——— Bedford lime-stone 168
——— Bonnes - - 251
——— Bristol hot-well, England - - - - 169
——— Buxton - - *ib.*
——— Castelnova d'Asti 272
——— Cauterets - - 252
——— Cheltenham - 110
——— Enghien - - 253
——— Forges - - 112
——— Harrogate - - 249
——— Hartfell chalybeate 111
——— Lebanon - - 168
——— Moffat - - 250
——— Mont-d'or - - 169
——— Passy - - 111
——— Pittsburgh chalybeate - - - - - 109
——— Pyrmont - - 111
——— Rouen - - 112
——— Saint Genis - 272
——— Saint Sauveur - 252
——— Sales - - - 272
——— Scarborough - 112
——— Seltz or Selters - 170
——— Schoolcy mountain 109

Page.

Mineral spring, Spa - - - 111
——— (Sulphur) Ballston 249
——— (Sulphur) Bedford *ib.*
——— (Sulphur) Saratoga *ib.*
——— Tunbridge - 112
——— Vichy - 112 & 170
——— Voghera - - 272
——— (Yellow) near Philadelphia - - - - 112
——— (Yellow) Ohio - 110
——— (Yellow) Virginia 112
Mineral waters, (acidulous) - 167
———, (artificial) - 53
———, (hydriodated) - 272
———, (purgative) - 373
———, (sulphurous) - 248
———, (tonic) - - 108
Minims - - - - - 45
Minium troches, P, - - - 83
Mistura aluminis, Paris H. - 80
——— *ammoniaci*, U. S., L. - 306
——— *ammoniaci et antimonii*, U. S. - - - - - 306
——— *amygdalarum*, U. S. - 436
——— *assafœtidæ*, L. - - 305
——— *assafœtidæ Millari*, B. *ib.*
——— *camphorata*, U. S., L., D., P., Pr. - - - - - 303
——— *ferri composita seu ferri cum myrrha*, U. S., L. - 81 & 218
——— *guaiaci ammoniata*, Guy's H. - - - - - 255
——— *moschi*, U. S., L. - 313
——— *opiata*, New York H. - 322
——— *rhei composita*, Guy's H. 401
——— *salina cum ferro*, Guy's H. 372
——— *sennæ composita*, Guy's H. 403
Mixture, (anti-scrofulous,) of gentian, Paris H. - - - 131
———, (antiseptic,) P. - - 156
———, (aperitive,) - - 234
———, (astringent) called Chopart's mixture - - - 222
———, (astringent) of kino, Paris H. - - - - - 91
———, (astringent) of ratanhy, Paris H. - - - - - *ib.*
——— (brucia,) F. M. - - 292
———, (calming,) Paris H. - 323
———, (compound) of elecampane, Paris H. - - - 141
———, (diaphoretic) Dr. Paris 156
———, (diuretic) Paris H. 235 & 239
———, (Dr. Paris' sedative) 322
———, (Dr. Paris' stimulating) 157
———, (Dr. Peysson's stibiopiated) Paris H. - - - 352
———, (Dr. Rivière's anti-emetic) 232

Page.

Mixture, (emetico-cathartic) - 352
———, (emeto-anodyne) Paris H. - - - - - - 322
——— for the croup, Paris H. 257
———, (gummous,) with kermes, Paris H. - - - 353
———, (metallic febrifuge) Paris H. - - - - - - 159
———, (minorative) Paris H. 411
———, (musk,) Paris H. - 313
——— of nitrate of potassa, Paris H. - - - - - - 234
——— of spirit of oil of copaiba 223
———, (stimulant) of horse radish, Dr. Paris - - - 191
———, (stimulant) of seneka, Paris H. - - - - 193
———, (stimulating) Paris H. 155 & 156
———, (stomachic) of bistort, Paris H. - - - - 93
———, (strychnia) F. M. - 290
———, (turpentine) Paris H. 213
———, (vomitive) - - - 257
Mixtures - - - - - *55*
Mole plant - - - - 397
Momordica elaterium - - - 386
Monarda punctata - - - 269
Moose wood - - - - 73
Morphia - - - - - 323
———, (acetate of) - - 326
———, (citrate of) - - 327
———, (Dr. Blondeau's process for obtaining) - - - 325
———, (Dr. Staples's process for obtaining) - - - 326
———, (sulphate of) - - *ib.*
Morus nigra - - - - 422
Moschus orientalis - - - 312
Mountain tea - - - - 241
Mulberry - - - - - 422
Muriate of baryta - - - 285
——— gold - - - 283
——— gold and soda - - *ib.*
Muriatic acid - - - - 162
——— gargle, Paris H. - - 163
——— oxymel - - - *ib.*
Musci islandici herba - - 147
Musk - - - - - - 312
Mustard seed - - - - 74
Myrica cerifera - - - 364
Myristica moschata - - 177
Myroxilum balsamiferum - - 220
——— *peruiferum* - - *ib.*
Myrrh - - - - - - 217
Myrrha - - - - - *ib.*
Myrtle, (common) - - - 97
———, (wax) - - - - 364

Page.

Myrtle wax - - - - - 364
Myrtus pimenta - - - 179

N.

Naphtha - - - - - - 456
Narcotic remedies - - - 317
Narcotin, or Derosne's salt - 327
Nerium antidysentericum - - 151
Nervine balsam, P. - - - 178
Neutral acetate of ammonia - 155
——— acetate of lead - - 83
——— arsenical salt of Macquer 159
——— carbonate or bi-carbonate of potassa - - - - - 233
——— tartrate of potassa - 373
Nicotiana tabacum - - - 333
Nitras argenti fusus - - - 62
Nitrate of potassa - - - 233
——— of silver - - - 62
Nitre - - - - - - 233
Nitric acid - - - - 160
——— or nitrous ether - - 300
——— oxide of mercury - - 64
Nutmeg - - - - - 177
Nux moschata - - - - *ib.*
——— *vomica* - - - - 288

O.

Oak bark - - - - - - 88
Oat meal - - - - - 440
Oil, (animal) - - - - 427
——— (essential) of nutmeg, P., R. 178
——— (fixed) of nutmeg, P., Den. *ib.*
——— (fixed or fatty) - - 426
——— (olive) - - - - 437
——— of horse-mint - - - 75
——— of vitriol - - - - 77
——— (white or poppy) - - 437
Ointment, (alkaline sulphurous) P. 247
——— (belladonna) - - 332
——— (compound styrax) P. 225
——— (Cullerier's anti-herpatic) Paris H. - - - - 283
——— (iodine) Brera - - 271
——— (iodureted) of hydriodate of potassa, F. M. - - 272
——— of cyanuret of mercury, Paris H. - - - - - 280
——— of deutiodide of mercury, F. M. - - - - 273
——— of gold, F. M. - - 285
——— of hydriodate of potassa, Brera - - - - - - 272
——— of muriate of gold and soda, F. M. - - - - 282
——— of red sulphuret of mercury, Paris H. - - - 279
——— populeum, P. - - 225
——— turpeth mineral, Paris H. 283

Page.

Ointments - - - - 56
Oleaginous mixture, Paris H. - 437
Olea europæa - - - - 149
—— *fixa* - - - - - 426
Oleo-resina copaiba - - - 221
Oleum absynthii, P. - - - 195
—— *absynthii æthereum*, Pol. *ib.*
—— *ammoniatum*, E. - - 67
—— *amygdalarum dulcium* - 436
—— *animale æthereum* - - 316
—— *cacao* - - - - 432
—— *cajeput* - - - - 311
—— *cantharidis*, P. - - 71
—— *caryophyllorum* - - 178
—— *catapuciæ minoris* - - 397
—— *infusum chamæmillæ*, Pr., Pol. - - - - - - 196
—— *lini* - - - - - 432
—— *monardæ punctatæ* - 75
—— *olivæ* - - - - 437
—— *pimentæ*, L., E., D. - 179
—— *ricini* - - - - 410
—— *rutæ*, P., Pol., Pr., Den., R. 265
—— *seu spiritus terebinthinæ* - 212
—— *sulphuratum*, L., E., Pr., B., Den., P. - - - 246
—— *tiglii* - - - - 396
—— *volatile sabinæ*, E., D., P. 265
—— *volatile seu æthereum chamæmeli*, Pr., A., L., E. - - 196
Olibanum or incense - - 219
Olive oil - - - - - 437
Olive tree - - - - - 149
One-flowered cancer-root - - 94
Onguent de la mère, P. - - 83
Ononis spinosa - - - - 244
—— *natrix* - - - - *ib.*
Opiate, (turpentine) Paris P. - 214
Opium - - - - - - 318
Opopanax - - - - 306
Orange - - - - - 420
—— flowers - - - 309
—— leaves - - - - 310
—— peel - - - - 209
—— tree - - - - 208
Orchis mascula - - - - 442
Orobanche uniflora - - - 94
—— *virginiana* - - *ib.*
Oriza sativa - - - - 440
Osmunda spectabilis - - - 432
Oxalic acid - - - - 423
Oxide of zinc - - - - 81
Oxidum ferri rubrum - - 105
—— *hydrargyri cinerei* - 281
—— *hydrargyri nigri* - 280
Oxigenated muriatic acid - - 163
Oximuriate of lime - - - 163
—— of mercury - - 276

Page.

Oximuriatic acid - - - 163
Oxymel *æruginis*, Den. - - 66
—— of squill, or *mel scillæ acetatum* - - - - - - 239
—— of colchicum, D., B. - 393

P.

Pæonia officinalis - - - 311
Pæony root - - - - *ib.*
Panax quinquefolium - - 227
Papaver rhæas - - - - 323
—— *somniferum* - - 318
Papaveris capsulæ - - - 323
Pareira brava - - - - 244
Parietaria officinalis - - - 242
Parillin - - - - - 256
Parsley-leaved yellow-root - 151
Partridge berry - - - 241
Passy springs - - - - 111
Pastes - - - - - - 56
Pastinaca opopanax - - - 306
Patientiæ radix - - - 145
Pearson's, (Dr.) solution, Paris H. 159
Pediluvium of muriatic acid - 163
Pectoral julep, Paris H. - - 428
Pellitory of Spain - - - 196
Pennyroyal, (American) - - 269
—— (European) - - 199
Pepper, (black) - - - 181
—— (black ethereal oil of) 183
—— (black extract of) - *ib.*
—— (long) - - - 182
—— mint - - - - 198
—— mint lozenges, P. - 199
—— (vinous infusion of white) 182
Periploca emetica - - - 367
Peroxide of iron - - - 105
Persica vulgaris - - - 416
Persimon - - - - - 92
Petroleum - - - - 456
Peruvian balsam - - - 220
—— bark - - - - 113
Peysson's, (Dr.) stibio-opiated mixture, Paris H. - - - 352
Philadelphia flea-bane - - 242
Phœnix dactylifera - - - 443
Phosphorated ether, P. - - 288
—— oil, F. M. - - *ib.*
—— salve, P. - - *ib.*
Phosphorus - - - - 287
Physalis alkekengi - - - 244
Physcia islandica - - - 147
Phytolacca decandra - - - 361
Pills - - - - - - 56
——, (acetate of lead) Paris H. 84
——, (aloetic) Paris H. - - 390
——, (antacid) - - 157
——, (anti-hysteric) Paris H. - 313

Page.
Pills, (anti-spasmodic) Paris H. 303 & 305
——, (anti-syphilitic) Paris H. 277
——, (Beloste's) Paris H. - 274
——, (brucia) F. M. - - 292
——, (Bontius' hydragogue) P. 390
——, (camphorated anodyne) New York H. - - - 320
——, (Dr. Méglin's oxide of zinc) Paris H. - - - - - 81
——, (Dr. Paris' astringent) - 106
——, (Dr. Paris' calming) - 321
——, (Dr. Paris' expectorant) 239
——, (Dr. Paris' purgative) - 237
——, (Dr. Paris' stimulant) - 157
——, (Dr. Paris' sulphuret of potassa) - - - - - 247
——, (emmenagogue) Paris H. 105
——, (Fuller's holly) P. - - 390
——, (Hahnemann's) Paris H. 281
——, (Keyser's anti-syphilitic) 383
——, (mercurial) Paris H. - 274
——, (musk) - - - - 313
—— of alum, (astringent) Paris H. 80
—— of arseniate of iron, Paris H. 160
—— of chloride of gold and sodium, Dr. Chretien - - - 284
—— of compound soap, Paris H. 237
—— of corrosive sublimate, Paris H. - - - - - 376
—— of deutoxide of mercury, F. M. - - - - - - 278
—— of oxide of gold, F. M. - 284
—— of protiodide of mercury - 277
—— of protoxide of mercury, F. M. - - - - - - *ib.*
—— of soap and mercury, Paris H. 275
—— of solidified copaiba - 222
——, (resolvent of gum ammoniac) Paris H. - - - 306
——, (sedative) Paris H. - - 303
——, (Stoll's tonic) - - 104
——, (strychnia) F. M. - - 290
——, (Sydenham's martial) - 104
Pilulæ aloes compositæ, L., B. - 390
—— *aloes cum ferro*, Guy's H. *ib.*
—— *aloes cum myrrha* - - *ib.*
—— *aloes cum myrrha et guaiaco*, U. S. - - - - - - *ib.*
—— *aloes cum zingibere*, D. - *ib.*
—— *aloes et assafœtidæ*, E. - *ib.*
—— *aloes et cinchonæ*, P. - *ib.*
—— *aloes et colocynthidis*, U. S. *ib.*
—— *aloes or pil. Rufi*, U. S., E., D. *ib.*
—— *aloeticæ* - - - - 390
—— *antimonii cum opio*, Guy's H. - - - - - - 321
—— *assafœtidæ*, U. S., B. - 305
Page.
Pilulæ assafœtidæ compositæ, U. S., Guy's H., New York H. - 305
—— *cambogiæ comp.*, L., D. 392
—— *cambogiæ et scammonii*, U. S. - - - - - - - *ib.*
—— *colocynthidis comp.*, F. - 386
—— *colocynthidis cum hydrargyro*, Guy's H. - - - *ib.*
—— *cynoglossi*, P. - - 320
—— *e styrace*, D. - - - *ib.*
—— *extracti colocynthidis comp.* U. S. - - - - - - 386
—— *ferri sulphatis*, U. S. - 81
—— *ferri sulphatis comp.*, U. S. *ib.*
—— *fœtidæ*, F., Den. - - 305
—— *hydrargyri*, U. S., L., D., E. - - - - - - - 274
—— *hydrargyri comp.*, P. - 277
—— *hydrargyri cum rheo*, Guy's H. - - - - - - 274
—— *hydrargyri cum ipecacuanha*, Guy's H. - - - - 275
—— *hydrargyri muriatis*, New York H. - - - - - 276
—— *hydrargyri oximuriatis*, Guy's H. - - - - - *ib.*
—— *hydrargyri sub-muriatis*, U. S. - - - - - - 275
—— *hydrargyri sub-muriatis comp.*, L., E. - - - - *ib.*
—— *jalapæ comp.*, U. S. - 381
—— *myrrhæ et ferri*, U. S. - 218
—— *opiatæ seu thebaicæ*, E. - 320
—— *opii*, U. S. - - - - *ib.*
—— *opii camphoratæ*, New York H, - - - - - 303
—— *purgantes cum mercurio*, Den. - - - - - - 275
—— *rhei aromaticæ* - - 292
—— *rhei compositæ*, U. S., E. *ib.*
—— *rhei cum soda*, Guy's H. *ib.*
—— *resolvens*, Den. - - 306
—— *Rufi*, U. S., L., E., D. 218
—— *saponis*, P. - - - - 237
—— *saponis cum opio*, L. - *ib.*
—— *scillæ*, U. S. - - - 238
—— *scillæ compositæ*, L., D. *ib.*
—— *scillæ cum hydrargyro*, Guy's H., New York H. - 239
—— *scilliticæ*, E., P., Den. - *ib.*
—— *sodæ*, Guy's H. - - 235
—— *sodæ sub-carbonatis*, New York H. - - - - - *ib.*
—— *thebaicæ*, E. - - - 320
—— *tonico-nervinæ*, Den. - 81
Pimenta - - - - - 179
Pimentæ baccæ - - - - *ib.*
Pimpinella anisum - - 205

	Page.
Pinckneya pubescens	123
Pinhones indici	397
Pink root	450
Piper betel	182
—— *cubeba*	183
—— *longum*	182
—— *nigrum*	181
Piperin	182
Pippsisewa	240
Pissa	215
Pistacia lentiscus	218
—— *terebinthus*	219
Pitch, (black)	214
Pittsburgh mineral spring	109
Pix Burgundica	*ib.*
— *liquida*	215
— *nigra*	214
Plantago psyllium	444
Plaster, (simple) P. (See *emplastrum*)	83
Plasters	57
Plenck's gummous mercury, P.	274
Pleurisy root	259
Plumbi acetas	83
—— *oxidum fuscum*	82
—— *oxidum rubrum*	83
—— *sub-acetatis liquor*, U. S., P.	84
—— *sub-carbonas*	*ib.*
Podalyria tinctoria	149
Poison oak	262
Podophyllum peltatum	384
Poke root	361
Polygala amara	149
—— *rubella*	*ib.*
—— *senega*	192
—— *vulgaris*	193
Polygonum bistorta	92
Polypodium filis mas	449
Pomegranate	96
Pompholix	81
Pompion	444
Poplar tree buds	225
Poppy heads	323
——, (red) flowers	*ib.*
Populus nigra	225
Porphyrization	48
Potassa fusa	60
Potassæ acetas	234
—— *arsenias*	159
—— *arsenis*	158
—— *bi-carbonas*	233
—— *et ferri tartras*	106
—— *et sodæ tartras*	273
—— *nitras*	233
—— *sub-carbonas*	231
—— *sulphas*	372
—— *super-oxalas*	423
—— *tartras*	273
Potato fly	71
Pothos fœtida	307
Poultice, (resolvent) Paris H.	155
—— (rubefacient) of pepper	181
Poultices	56
Powder, (alkaline gummous)	428
—— (anthelmintic) Paris H.	381
—— (anti-chloretic) Paris H.	114
—— (astringent) of kino	91
—— (Dr. Paris' purgative)	381
—— of muriate of gold and soda	284
—— of rhubarb and ipecacuanha, Paris H.	401
Powders	54
Prepared tutty	81
Prickly ash	225
—— poppy	328
—— yellow wood	226
Pride of China	452
Protiodide of mercury	277
—— (ether of)	*ib.*
—— (pills of)	*ib.*
Protarseniate of iron	160
Proto-chloride of iron	106
—— mercury	275
Proto-nitrate of mercury	281
Proto-sulphate of iron	80
Protoxide of calcium	85
—— lead	82
—— potassium	60
—— sodium	61
—— zinc	81
Provence reed	261
Prunes	443
Prunus domestica	*ib.*
—— *spinosa*	88
—— *virginicus*	343
Prussic acid	346
—— (Gay-Lussac's process for obtaining)	346
—— (London apothecaries' hall process for obtaining)	347
—— (medicinal) F. M.	348
—— (plants containing)	345
Prussiate of mercury	279
Psychotria emetica	357
Psyllium seeds	444
Pterocarpus erinacea, (note)	91
—— *santalinus*	263
Pyrethri radix	196
Pyrethrum	*ib.*
Pyrmont springs	111
Pyrus cydonia	444
Puccoon root	328
Pulmonaria officinalis	434
Pulpa tamarindi	412
Pulvis Algarotti	355

Page.

Pulvis aloes compositus, L., D. 390
——— *aloes cum canella*, D. - 115
——— *aluminis compositus*, E. - 80
——— *antimonialis* - - - 355
——— *aromaticus*, U. S., E., D. 172
——— *cinnamomi comp.*, L., P. 320
——— *contrayervæ comp.*, L. - 184
——— *cornu usti cum opio*, L. - 320
——— *cretæ præparatæ cum opio*, L. - - - - - - *ib.*
——— *de tribus*, Paris H. - 93
——— *elaterii comp.*, Guy's H. 387
——— *emeticus*, Guy's H. - 357
——— *galactopæus*, R. - - 409
——— *infantum*, R. - - *ib.*
——— *ipecacuanhæ comp.*, L. 320
——— *ipecacuanhæ cum opio*, Pr., Pol., Guy's H. - 320 & 321
——— *ipecacuanhæ cum rheo*, Guy's H. - - - - 357
——— *jalapæ compositus* - - 380
——— *kino compositus*, L. - 91
——— *magnesiæ compositus*, Den. 409
——— *nitrosus temperans*, Den. 234
——— *opiatus*, E. - - - 320
——— *pectoralis*, Pr., Pol. - 403
——— *rhei compositus*, New York H. - - - - - - 400
——— *rhei compositus*, Guy's H. 401
——— *rhei cum hydrargyro* - *ib.*
——— *rhei cum magnesia*, Guy's H. - - - - - - *ib.*
——— *rhei salinus*, Guy's H. - *ib.*
——— *scammonii compositus*, L. 382
——— *scammonii cum hydrargyro*, Guy's H. - - - 382
——— *scillæ compositus*, F., Guy's H. - - - - - - 239
——— *sennæ compositus*, L. - 403
——— *tragacanthæ compositus*, L. 429
Pulverization - - - - 48
Punica granatum - - - 96
Purgative anti-arthritic powder, P. 403
——— bolus, Dr. Paris - 381
——— draught, Paris H. 371 & 403
——— emulsion, P. - - 382
——— injection, Paris H. - 371
——— pills, Dr. Paris - - 390
——— powder, Dr. Paris - 382
——— remedies - - - 411
Purging cassia - - - - *ib.*
——— nuts - - - - 397
Purple digitalis - - - 337

Q.

Quassa, (see note) - - - 126
Quassia - - - - - 125
Quassiæ lignum - - - *ib.*

Page.

Quassia amara - - - - 125
——— *excelsa* - - - *ib.*
——— *simaruba* - - - 127
Quercia, (see note) - - - 89
Quercus falcata - - - *ib.*
——— *robur* - - - - 88
Quince seeds - - - - 444
Quinia - - - - - 120

R.

Radix asparagi - - - 239
——— *chinæ* - - - - 257
——— *cucurmæ* - - - 187
——— *donacis* - - - - 261
——— *enulæ campanæ* - - 140
——— *et cortex sassafras* - - 257
——— *graminis* - - - 439
——— *polygalæ senegæ* - - 192
——— *ratanhiæ* - - - 90
——— *rubiæ tinctorum* - - 91
——— *salep* - - - - 442
——— *serpentariæ virginiana* - 187
Raisins - - - - - 443
Raphani silvestris radix - - 190
Rapontic root - - - - 402
Ranunculus acris - - - 75
——— *bulbosus* - - *ib.*
Raspberries - - - - 424
Ratanhy root - - - - 90
Red cardinal flower - - - 263
—— cider - - - - 265
—— oxide of mercury - - 64
—— oxide of lead - - - 83
—— oxide of iron - - - 105
—— pink - - - - 263
—— precipitate - - - 64
—— rose - - - - 97
—— sulphuret of mercury - 278
Regent's ophthalmic salve, P. - 65
Remedies acting in a special manner on the organs of generation 264
——— (action of) - - 28
——— (administration of) - 34
——— (choice of simple) - 46
——— (classification of) - 57
——— (intimate nature and chemical properties of) - 24
——— (physical properties of) 18
——— simple or compound - 37
Resolvent collyrium, Paris H. - 84
Resina guaiaci - - - - 254
——— *jalapæ* - - - - 381
——— *mastiche* - - - 218
——— *sanguis draconis* - - 87
Resin copaiba - - - - 221
—— elemi - - - - 216
—— of guaiacum - - - 256
—— of jalap - - - - 381

Page.

Rest harrow - - - - 244
Rhabarbarin - - - - 400
Rhamnus catharticus - - 398
——— *frangula* - - - 399
——— *zizyphus* - - - 443
Rhases' white ointment, P. - 85
Rhei radix - - - - 399
Rheum palmatum - - - *ib.*
——— *rhaponticum* - - 402
Rhodium or rose wood - - 263
Rhubarb - - - - - 399
——— lozenges - - - 401
Rhum - - - - - 296
Rhus copallinum - - - 100
—— *coriaria* - - - - *ib.*
—— *glabrum* - - - - *ib.*
—— *radicans* - - - 262
—— *toxicodendron* - - - *ib.*
—— *typhinum* - - - - 100
Ribes rubrum - - - - 421
Rice - - - - - - 440
Richardsonia brasiliensis - - 357
Rivière's anti-emetic mixture - 232
Roborant fomentation, Paris H. 89
Rochelle salt - - - - 373
Roman chamomile - - - 195
——— or small wormwood - *ib.*
Rosa canina - - - - 97
—— *gallica* - - - - *ib.*
—— *rubra* - - - - *ib.*
Rosmarini hortensis herba - - 199
Rosmarinus officinalis - - *ib.*
Rosemary - - - - *ib.*
Rose, (pale) - - - 416
Rotrou's solvent - - - 355
Rouen's spring - - - 112
Round zedoary - - - 186
Rousselot's caustic paste amended by Dr. Dubois - - - 64
Rubefacients - - - - 69
Rubia tinctoria - - - 91
Rubus fructicosus - - - 99
——— *idæus* - - - - 424
——— *procumbens* - - - 99
——— *villosus* - - - - *ib.*
Rue, (common) - - - 264
Rumex acetosa - - - 422
——— *acetosella* - - - 423
Rupture-wort - - - - 244
Rusci radix - - - - 240
Ruscus aculeatus - - - *ib.*
Rust of iron - - - - 105
Rutæ folia - - - - 264
Ruta graveolens - - - *ib.*
Rye flour - - - - - 441

S.

Sabatia angularis - - - 134

Page.

Sabina officinalis - - - 265
Saccharum - - - 426 & 437
Saffron - - - - - - 266
Sagapenum - - - - - 306
Sage - - - - - - 199
Sago - - - - - - 442
—— (white) - - - - - *ib.*
Sagus farinaria - - - *ib.*
Saint Ignatius bean - - - 289
—— Sauveur sulphur spring - 252
Sal ammoniacalis - - - 154
—— *prunella* - - - - 233
—— *volatile cornu cervi* - - 158
Salep or Salop - - - 442
Salix alba - - - - 144
Salsola soda - - - - 235
Saltpetre - - - - - - 233
Salve, (anti-herpetic) Paris H. 276
———, (belladonna) Paris H. - 332
———, (Dupuytren's eye) - 65
———, for scald head, Paris H. 248
———, of protiodide of mercury, F. M., Paris H. - - - 277
———, (phosphorated) P. - 288
———, (Regent's ophthalmic) P. 65
———, (resolvent) Paris H. - 276
———, (rubefacient) - - 157
———, (sulphuro-saponaceous,) Paris H. - - - - 247
Salves - - - - - - 56
Salvia officinalis - - - 199
Samphire - - - - 454
Sanders wood, (red, white, and yellow) - - - - 263
Sanguinara - - - - 330
Sanguinaria canadensis - - 328
Santalum album - - - 263
Sapo guaiacinus, Pr., Pol. - 255
—— *jalapinus*, B., Pr., Pol. - 237
—— *medicinalis*, P. - - 236
Saponaceous lotion, Paris H. - 237
Saratoga and Ballston springs - 374
——— sulphur spring - - 247
Sarsaparilla - - - - 255
——— (German) - - 263
Sassafras - - - - - - 257
——— (*laurus*) - - - *ib.*
——— (*medula*) - - 431
——— pith - - - - *ib.*
Savaresi's, (Dr.) Laffecteur's anti-syphilitic rob - - - 257
Savin - - - - - - 265
Scabiosa arvensis - - - 263
Scabious, (*Scabiosa arvensis*) *ib.*
——— (*erigeron*) - - 242
Scammonium, (*gummi resina*) 381
Scammony, (Aleppo) - - *ib.*
———, (Montpellier) - 382

Page.

Scammony, (Smyrna) - - 282
———, (Spurious) - - *ib.*
Scandix cerefolium - - - 206
Scilla maritima - - - 238
Scillitin - - - - - *ib.*
Schooley's springs - - - 109
Scorzonera hispanica - - - 263
Scull-cap, (blue) - - - 202
Scurvy-grass - - - - 191
Scutellaria lateriflora - - 202
Sea fennel - - - - 454
Sea lavender - - - - 95
Sebum ovilli - - - - 446
Secale calcaratum seu cornutum - 267
Sedillot's, (Dr.) febrifuge pills 122
Sedum acre - - - - 75
Seidlitz water - - - - 379
Seignette's salt - - - 373
Selinum palustre - - - 307
Selters or Seltz mineral water - 170
Seltz or Selters mineral water - *ib.*
Semen contra vermes - - - 450
——— *angelicæ sativæ* - - 203
——— *anisi* - - - - 205
——— *coffeæ* - - - - 189
——— *sinapis nigræ* - - 74
Senecio vulgaris - - - 444
Senegin - - - - - 193
Seneka root - - - - 192
Senna, (American) - - - 404
———, (exotic) - - - 402
Serpentara, (Dr. Conwell's) - 188
Serpentaria, (aristolochia) - 187
Serum lactis - - - - 445
Silene virginica - - - 454
Silk weed, (common) - - 260
———, (flesh-coloured) - *ib.*
Simaruba - - - - - 127
Simple plaster, P. - - - 83
Sinapis nigra - - - - 74
Sinapism, Paris H. - - - *ib.*
Sinapisms - - - - 56
Single marigold - - - 198
Skunk cabbage - - - 307
Slippery elm bark - - - 430
Small cardamom - - - 185
——— centaury - - - 134
——— cicuta - - - - 342
——— spikenard - - - 227
Smilax china - - - - 257
——— *sarsaparilla* - - - 255
Snake-root, (Black or rattle) - 339
———, (Virginia) - - 187
Snake-wood - - - - 290
Sneeze-wort - - - - 198
Soap, (amygdalate or medicinal) 236
Soda caustica - - - - 61
Soda, (caustic) - - - *ib.*

Page.

Soda powders - - - - 236
Sodæ acetas - - - - *ib.*
——— *arsenias* - - - - 159
——— *bi-carbonas* - - - 235
——— *oxi-murias* - - - 166
——— *phosphas* - - - - 373
——— *sub-boras* - - - - 85
——— *sub-carbonas* - - - 235
——— *sub-carbonas exsiccatus*, U. S. L., D. - - - - - *ib.*
——— *sulphas* - - - - 370
Solania - - - - - 259
Solanic acid - - - - *ib.*
Solanum dulcamara - - - 258
——— *nigrum* - - - 259
——— *tuberosum* - - - 442
Soldanella - - - - 384
Solidago odora - - - - 197
Solutio arsenicalis, E. - - 159
Solutio potassæ citratis, New York H. - - - - - - 232
——— *sub-carbonatis potassæ*, New York H. - - - - - *ib.*
——— *sulphatis cupri composita*, E. 66
Solution - - - - - - 52
——— of arseniate of ammonia, St. Louis hospital - - - 160
——— of cyanuret of mercury 280
——— of muriate of baryta, P. 285
——— (Pearson's) of arseniate of soda, Paris H. - - - 159
Sophora tinctoria - - - 149
Sorrel, (common) - - - 422
——— tree - - - - 99
South-sea tea - - - - 242
Southern wood - - - 195
Spa, (Ballston) spring - - 376
——— (Germany) spring - - 111
Spanish fly - - - - 69
——— viper-grass - - - 263
Sparrow-grass - - - - 239
Speedwell - - - - 193
Spermaceti - - - - 446
Spigelia marylandica - - 450
Spikenard - - - - 226
Spirea trifoliata - - - 360
Spirit of nitrous ether - - 300
——— of salt - - - - 162
——— (sweet) of nitre - - 300
Spiritus ammoniæ, L., D. - - 67
——— *ammoniæ aromaticus*, L. *ib.*
——— *ammoniæ fœtidus*, L., D. 305
——— *anti-scorbuticus*, P. - 191
——— *ætheris nitrosus*, U. S., L., E. - - - - - - 300
——— *ætheris sulphurici*, U. S., L., E., F. - - - - - 299
——— *ætheris sulphurici compo-*

Page.

situs, or Hoffman's anodyne liquor, U. S., L., P., Pr., Pol. 299
Spiritus armoraciæ compositus, L., D. - - - - - - 191
——— *camphoræ*, L., D., P. - 303
——— *camphoratus*, Pr., Pol., Den. - - - - - - - *ib.*
——— *cochleariæ*, P., Pr., Pol., A., R., B. - - - - - 191
——— *cochleariæ compositus*, B. 192
——— *lavandulæ*, U. S., L., D. 200
——— *lavandulæ volatilis*, P. - *ib.*
——— *mindereri* - - - - 155
——— *menthæ piperitæ* - - 198
——— *myristicæ*, L., E. - - 178
——— *nitri dulcis*, U. S., L., P., E. - - - - - - - 161
——— *nitrico-æthereus*, Pr., Pol., A. - - - - - - - *ib.*
——— *olei copaibæ*, Dublanc - 223
——— *rosmarini*, or Queen of Hungary water, U. S., E., D., L., P. - - - - - - 200
——— *saponatus*, A. - - 237
——— *sulphurico-æthereus*, Pr. 299
Sponge - - - - - - - 272
Spongia officinalis - - - *ib.*
Spotted crane's-bill - - - 93
——— lung-wort - - - 434
Squill - - - - - - - 238
Stahl's temperant powder, P. - 279
Stalagmitis cambogioides - - 391
Staples', (Dr.) process for obtaining cantharidin - - - 70
Star-grass - - - - - 135
Starch - - - - - - 441
Statice caroliniana - - - 95
——— *limonium* - - - *ib.*
Strawberries - - - - 424
Stemless milk-vetch - - - 263
Stibii deuto-murias sublimatus - 63
——— *et potassæ tartras* - - 350
——— *hydro-sulphuretum rubrum* 352
Stimulant remedies, the action of which is particularly spent on the skin - - - - - 244
Stimulant remedies acting especially on certain glands and absorption generally - - 269
Stimulant remedies, the action of which is especially spent upon the nervous system - - 286
Stimulants - - - - - 152
——— (diffusible or general) 154
——— (general) obtained from the mineral kingdom - *ib.*
——— (general) furnished by the vegetable kingdom - - 171

Page.

Stimulants, (special) - - 229
Stinking chamomile - - - 196
——— ground-pine - - 227
——— orach - - - 312
Stœchas or French lavender - 201
Stoll's tonic pills - - - - 104
Stomachic bolus, Paris H. - 266
——— mixture of bistort, Paris H. - - - - - - 93
Storax, (liquid) - - - 225
——— (solid) - - - - 224
Stramonium - - - - 332
Striated ipecacuanha - - 357
Strychnia - - - - - - 290
Strychnos colubrina - - - *ib.*
——— *ignatia* - - - 289
——— *nux vomica* - - 288
Styrax benzoe - - - - 223
——— *liquidus* - - - 225
——— *officinalis* - - - 224
Styrax or Storax, (liquid) - 225
——— (solid) - - 224
Sub-borate of soda - - - 85
Sub-carbonate of ammonia - 157
——— iron - - 105
——— lead - - 84
——— potassa - - 231
——— soda - - 235
Sub-deuto-sulphate of mercury 283
Sub-hydrosulphate of antimony 352
Sub-phosphate of soda - - 373
Succin or yellow amber - - 315
Succinic acid - - - - 316
Succinum seu *ambarum luteum* 315
Succus acaciæ veræ - - - 88
Suet - - - - - - 446
Sugar - - - - 426 & 438
——— (grape) - - - - 426
——— (maple) - - - - 438
——— of lead - - - - 83
Sulphas (bruciæ) - - - 292
——— *(cinchoniæ)* - - 119
——— *(cupri)* - - - 65
——— *(ferri)* - - - 80
——— *(magnesiæ)* - - 371
——— *(morphiæ)* - - 326
——— *(potassæ)* - - 372
——— *(quiniæ)* - - 121
——— *(sodæ)* - - - 370
——— *(strychniæ)* - - 290
——— *(zinci)* - - - 82
Sulphate of brucia - - - 292
——— cinchonia - - 119
——— copper - - - 65
——— iron - - - 80
——— magnesia - - 371
——— morphia - - 326
——— potassa - - - 372

Page.

Sulphate of quinia - - - 121
——— soda - - - 370
——— strychnia - - 290
——— zinc - - - 82
Sulphur or brimstone - - 245
Sulphur auratum antimonii - 353
Sulphuret of antimony - - 354
——— lime - - - 248
——— potassa - - 247
——— soda - - - 248
Sulphuretted sub-hydrosulphate of antimony - - - - 353
Sulphuretum antimonii - - 354
——— *calcis* - - - 248
——— *potassæ* - - 247
——— *sodæ* - - - 248
Sulphuric acid - - - - 77
——— or hydratic ether - 298
Sulphurous acid - - - 161
——— mineral springs (many) indicated - - - - 253
——— mineral waters - 248
Sumach, (narrow-leaved) - - 100
——— (Pennsylvania) - - *ib.*
——— (Virginian) - - *ib.*
Super-sulphate of alumina and potassa - - - - - 79
Super-tartrate of potassa - - 409
Super-tartrate of potassa and antimony - - - - - 350
Suppositories - - - - 57
Swallow-wort - - - - 260
Swamp-cabbage - - - 307
Swediaur's alcoholic lotion - 86
Sweet almond - - - - 435
——— briar - - - - 97
——— fern - - - - 95
——— flag - - - - 207
——— scabious - - - 242
——— scented golden rod - 197
Swietenia febrifuga - - - 92
——— *mahogany* - - - *ib.*
Sydenham's laudanum, P., Den. 321
——— martial pills - - 104
Symplocarpus fœtida - - 307
Syringa vulgaris - - - 149
Syrup, (compound) of succory 401
———, (Dr. Richoux ammoniacal) 157
Syrup of acetate of morphia, F. M. - - - - - - 327
——— cinchonia, F. M. - 120
——— jalap, P. - - - 381
——— morphia, F. M. - - 327
——— mercurial ether, Paris H. - - - - - - 227
——— stœchas - - - 201
——— sulphate of morphia, F. M. - - - - - - 327

Page.

Syrup of sulphate of quinia, F. M. - - - - - - 122
——— sulphuret of potassa, P. 247
——— vanilla, (Dr. Alibert's) 177
Syrupus absynthii - - - 195
——— *benzoes* - - - 224
——— *cichorii compositus* - 142
——— *cichorii cum rheo* - - *ib.*
——— *cinchonæ*, P. - - 119
——— *cinchonæ vinosus*, P. - *ib.*
——— *cinnamomi*, P., Pol. - 172
——— *colchici*, E. - - - 393
——— *croci*, P., L., Pol., Pr. 267
——— *ipecacuanhæ* - - 357
——— *opiatus*, Pr., Pol. - - 322
——— *opii*, P., D. - - *ib.*
——— *papaveris*, P., L. - - 323
——— *papaveris erratici*, seu *rhœados*, P., L., D., Den., A. *ib.*
——— *rhei*, U. S. - - - 401
——— *rhei aromaticus*, U. S. - *ib.*
——— *rhei compositus*, P., F., Pol., R., Pr., Den. - - *ib.*
——— *rhei cum sennæ*, U. S. - *ib.*
——— *rosæ gallicæ*, E. - - 97
——— *sarsaparillæ*, P. - - 257
——— *sarsaparillæ et guaiaci*, U. S. - - - - - - *ib.*
——— *sarsaparillæ compositus* *ib.*
——— *sarsaparillæ compositus*, Dr. Cuisinier - - - *ib.*
——— *scillæ*, U. S., E. - - 239
——— *scilliticus*, F. - - *ib.*
——— *senegæ*, U. S., Pr., Pol. 193
——— *sennæ*, L., E., D., B., P. 404

T.

Table of doses according to the age, &c. - - - - - 36
——— of measures - - - 44
——— of weights - - - 43
——— of the names of wines, &c., and proportion of alcohol in one hundred parts, &c. - - 295
——— of the principal medicinal plants, arranged in the order of their natural families - - 457
——— showing the difference of minims, drops, and grains of medicinal preparations - - 45
Taffia - - - - - - 295
Tamarind - - - - 412
Tamarindus indica - - - *ib.*
Tapioca - - - - - 442
Taraxaci herba, radix, seu *dens leonis* - - - - - 142
Tartaric acid - - - - 419
Tartar emetic - - - - 350

Page.

Tartrate of potassa and soda - 373
——— of potassa and iron - 106
Taurocolla - - - - 445
Tea - - - - - - 210
Temperants or refrigerants - 417
Tennant's powder - - - 165
Terebinthina - - - - 211
——— *pistacina* - - 219
Terra japonica - - - - 86
Thea amara, Den. - - - 254
——— *bohea* - - - - 210
——— *sinensis* - - - - *ib.*
——— *viridis* - - - - *ib.*
Thein, (note) - - - - *ib.*
Thorough-wort - - - 138
Three-leaved arum - - - 208
Thridace - - - - - 336
Thridax - - - - - *ib.*
Tilia europæa - - - - 310
Tin - - - - - - - 455
Tinctura absynthii, P., Den., B., F., &c. - - - - - 195
——— *absynthii composita*, P. *ib.*
——— *acidi sulphurici*, U. S. 78
——— *aloes*, P., A., B. - 390
——— *aloes aquosa*, B. - - *ib.*
——— *aloes ætherea*, E. - 391
——— *aloes composita*, New York H. - - - - - *ib.*
——— *amara composita*, B., Pr., Pol., A. - - - - 131
——— *ammoniata aromatica*, U. S. - - - - - 67
——— *angelicæ*, A. - - 204
——— *angusturæ*, D., B. - 128
——— *arnicæ*, Pol. - - 293
——— *aromatica*, P., Pr., F. 172
——— *assafœtidæ*, U. S., L., D., E., P., Pol., F., Pr., D., B. 305
——— *assafœtidæ ammoniata*, E. - - - - - - *ib.*
——— *aurantii*, L., D. - 209
——— *benzoes*, P., A., Den., &c. 223
——— *benzoini composita*, L., D., E. - - - - - - *ib.*
——— *bonplandiæ trifoliatæ*, E. - - - - - - 228
——— *calami composita* - 207
——— *camphoræ*, U. S., E. - 303
——— *camphoræ composita*, L. 321
——— *camphoræ opiata*, U. S. *ib.*
——— *cantharidum*, U. S., L., E., D., P., A., B., Pol., R., Pr. 71
——— *capsici*, U. S., L. - 180
——— *cardamomi*, U. S., L., D., E. - - - - - - 186
——— *cardamomi composita*, L., D. - - - - - - *ib.*

Page.

Tinctura cascarillæ, L., D., P., B. - - - - - - 174
——— *catechu*, U. S., L., D., E., P., Pr. - - - - - 87
——— *catechu composita*, Pol. *ib.*
——— *cathartica*, Den. - 381
——— *cinchonæ*, U. S., L., E., D., P., R., Pr., Pol., F., Den., B. - - - - - - 118
——— *cinchonæ composita*, or Huxham's tincture of bark, U. S., L., E., D., P. - - - *ib.*
——— *cinchonæ ammoniata*, L. *ib.*
——— *cinchonæ ætherea*, P. - *ib.*
——— *cinnamomi*, U. S., L., E., D., P., &c. - - - - 172
——— *cinnamomi composita*, L., D., E. - - - - - - *ib.*
——— *colchici*, P. - - 393
——— *colocynthidis*, A., F., Pol. - - - - - - 386
——— *colombæ*, U. S., L., E., D. - - - - - - 130
——— *croci sativi*, E., D. - 267
——— *crotonis elutheriæ*, E. - 175
——— *euphorbii*, Pr., R., Pol. 75
——— *ferri ammoniati*, L. - 107
——— *gallarum*, E., D. - 90
——— *gentianæ*, P., Pr., Pol., B. - - - - - - 131
——— *gentianæ ammoniacalis*, P. - - - - - - *ib.*
——— *gentianæ composita*, U. S., L., D., E. - - - *ib.*
——— *guaiaci*, U. S., L., D., E. - - - - - - 255
——— *guaiaci ammoniata*, U. S., L., E., D., Pr., &c. - *ib.*
——— *gummi ammoniaci*, P. 306
——— *humuli* - - - 144
——— *kalina*, Pol. - - 61
——— *kinæ composita*, Pr. - 118
——— *kino*, U. S., L., E., D. 91
——— *lavandulæ composita* - 200
——— *ligni guaiaci*, P., Pr. - 254
——— *menthæ piperitæ*, U. S. 198
——— *moschi*, U. S., D. - 313
——— *moschi ætherea*, P. - *ib.*
——— *muriatis ferri*, U. S., D., L., E. - - - - - - 107
——— *myrrhæ*, U. S., E., L., P., D., &c. - - - - - 218
——— *opii*, U. S., L., E., D., P. - - - - - - 321
——— *opii ammoniata*, formerly paregoric elixir, E. - - *ib.*
——— *opii benzoica*, Pr. - *ib.*
——— *opii camphorata* seu *elixir*

Page.

paregoricum Anglorum, E., D., Den. - - - - - - 321
Tinctura opii crocata, P., Den. *ib.*
——— *pimentæ acida*, B. - 179
——— *pyrethri*, P. - - 197
——— *quassiæ*, U. S., D., E. 127
——— *ratanhiæ composita* - 91
——— *rhabarbari aquosa*, Den. 401
——— *rhei*, U. S., D., E., &c. *ib.*
——— *rhei et aloes*, U. S., E. *ib.*
——— *rhei et gentianæ*, U. S., E. - - - - - - - *ib.*
——— *rhei vinosa*, Pr., Pol., Den. - - - - - - - *ib.*
——— *saponis camphorata*, E. 237
——— *saponis et opio*, E. - *ib.*
——— *serpentariæ*, U. S., L., D., E. - - - - - - 188
——— *scillæ*, L., D., P., E. 239
——— *sennæ*, L., D. - - 404
——— *sennæ aromatica* - *ib.*
——— *sennæ composita*, U. S. E. - - - - - - - *ib.*
——— *toluifera balsami*, E., P. 221
——— *tolutani*, U. S. - - *ib.*
——— *valerianæ ammoniata*, U. S., L., D., Pr. - - - 309
——— *valerianæ æthera*, Pol., F., Pr. - - - - - - *ib.*
——— *zingiberis*, U. S., E., L., D. - - - - - - - 185
Tincture, (Bestuchef's tonic) P., A. - - - - - - 107
——— (ethereal) of deutiodide of mercury, F. M. - - - 278
——— of cloves, P. - - 178
——— of deutiodide of mercury, F. M. - - - - - 278
——— of lupulin, F. M. - 144
——— of quinia - - - 122
——— (tartarized) of Mars, P. 106
Tinctures, (alcoholic) - - 53
——— (ethereal) - - *ib.*
Tobacco - - - - - - 333
Tolutanum balsamum - - 220
Thomson's, (Dr.) formula for the preparation of the wine of colchicum - - - - - - 393
Tonic and astringent mixture of angustura - - - - 128
——— animal substances - - 151
——— bolus, Dr. Paris - - 106
——— mixture of angustura, Paris H. - - - - - - 128
——— mixture of quassia - - 127
——— mixture, Paris H. - - 118
——— substances - - - 101
——— vegetable substances - 113

Page.

Tooth-ache tree - - - 225
Tormentillæ radix - - - 98
Tormentilla erecta - - - *ib.*
Tormentil root - - - - *ib.*
Tragacanthæ gummi - - 428
Tragacantin - - - - 429
Triosteum perfoliatum - - 385
Triticum repens - - - 439
Troches - - - - - 54
Trochisci nitratis potassæ, E. - 234
Tronchin's marmelade, Paris H. 412
Tulip-tree - - - - 175
Turmeric - - - - 187
Turpentine - - - - 211
——— (essential oil of) - 212
Turpeth - - - - - 383
——— mineral - - - 283
Tussilaginis herba et flores - 141
Tussilago farfara - - - *ib.*

U.

Ulmus americana - - - 431
——— *aspera* - - - - *ib.*
——— *campestris* - - - 263
——— *fulva* - - - - 430
——— *rubra* - - - - *ib.*
Unguentum acidi nitrosi, U. S., E. 161
——— *antimonii tartarizati*, New York H. - - - 352
——— *cantharidum*, U. S., L. - - - - - - 71
——— *carbonatis plumbi*, E. 85
——— *cerusæ*, Pr., Pol., B. *ib.*
——— *gallarum*, U. S., E., Paris H. - - - - - 90
——— *elemi*, Pol., B., Pr. 217
——— *elemi compositum* - *ib.*
——— *hydrargyri*, U. S., L., P., F., E. - - - - - 274
——— *hydrargyri cinereum*, Pr., Pol. - - - - - *ib.*
——— *hydrargyri rubrum*, B. 65
——— *hydrargyri nitrico-oxidi*, U. S., E. - - - *ib.*
——— *hydrargyri mitius*, L., D., P. - - - - - 274
——— *hydrargyri sub-muriatis*, Guy's H. - - - 276
——— *hydrargyri nitratis fortius*, U. S., E., L., D., F., P. 282
——— *hydrargyri nitratis mitius*, U. S., E. - - - *ib.*
——— *infusi cantharidis*, E. 71
——— *mezerei*, Pol. - - 73
——— *nitricum*, P. - - 161
——— *oxidi hydrargyri cinerei*, U. S., E. - - - 281
——— *piperis nigri*, D. - 181

Page.

Unguentum plumbi sub-carbonatis, U. S., D. - - - - 85
——— *sabinæ*, U. S., L., D. 265
——— *sulphuris*, U. S., E., D., Pr., L., P. - - - 247
——— *sulphuris compositum*, U. S., L. - - - - - *ib.*
——— *sulphuratum compositum*, Den. - - - - - *ib.*
——— *zinci*, L., E., F. - 81
——— *zinci oxidi impuri*, U. S. - - - - - - *ib.*
Upas tiente - - - - - 290
Urea - - - - - - 230
Urtica urens - - - - 75

V.

Valerianæ sylvestris radix - - 308
Valeriana celtica - - - *ib.*
——— *dioica* - - - *ib.*
——— *major* - - - *ib.*
——— *officinalis* - - - *ib.*
——— *phu* - - - - *ib.*
Valerian, (garden) - - - *ib.*
———, (small) - - - - *ib.*
Vanillæ fructus - - - 176
Vanilla - - - - - *ib.*
Van Swieten's liquor, Paris H. 277
Vegetable astringent substances 86
——— emetic substances - 356
Velpeau's astringent clyster - 222
Veratria - - - - - 394
Veratrum album - - - 393
——— *sabadilla* - - - 394
——— *viride* - - - 393
Verdigris - - - - - 66
Vermifuge remedies - - 448
Vermilion - - - - 278
Veronicæ maris summitates - 193
Veronica beccabunga - - - 194
——— *chamædris* - - - *ib.*
——— *officinalis* - - - 193
——— *spicata* - - - 194
Vichy mineral waters - - 170
——— artificial water - - *ib.*
Vinegar - - - - - 418
——— of roses, P., Den. - 97
——— (the four thieves) P. - 200
Vinum - - - - - 294
——— *absynthii*, P. - - 195
——— *amarum*, B. - - - 118
——— *anti-scorbuticum*, P. - 191
——— *antimonii tartarizati*, U. S. 352
——— *antimoniale*, P. - - *ib.*
——— *cinchonæ*, P. - - - 118
——— *cinchonæ compositum*, P. *ib.*
——— *colchici*, U. S. - - 393
——— *enulæ*, P. - - - 141

Page.

Vinum ferri, U. S., D., L. - 104
——— *gentianæ compositum*, U. S., E., B. - - - - - 131
——— *ipecacuanhæ*, U. S., L., E., D. - - - - - - 357
——— *martianum*, Pr., F. - 104
——— *opiatum fermentatione paratum*, or Abbé Rousseau's laudanum or drops, P. - - 322
——— *opii*, U. S., L., E. - 321
——— *rhei*, U. S., E., F. - 401
——— *scilliticum*, P. - - 239
——— *tartratis antimonii*, E. - 352
Viola arvensis - - - - 366
——— *cuculata* - - - - *ib.*
——— *ipecacuanha* - - - *ib.*
——— *odorata* - - - - *ib.*
Violin or violia - - - - *ib.*
Virginia goat's rue - - - 454
——— snake-root - - - 187
Vitis vinifera - - - 294 & 443
Vitriolic acid - - - - 77
Vitriolated tartar - - - 372
Volatile salt - - - - 157
——— salt of hartshorn - - 158
——— spirit of hartshorn, of silk thread - - - - - - 158
——— vitriolic acid - - 161
Vitrum antimonii - - - 355

W.

Wall pellitory - - - - 242
Warner's gout cordial - - 404
Washing - - - - - 50
Water avens - - - - 98
——— cress - - - - 192
——— eryngo - - - - 184
——— hemlock - - - - 343
Wax - - - - - - 446
——— myrtle - - - - 364
Weights, (table of) - - - 43
Wheat flour - - - - 441
Whey - - - - - 445
White agaric - - - - 406
——— and yellow henbane - 335
——— copperas - - - 82
——— hellebore root - - 393
——— lead - - - - 84
——— looch, P. - - - 436
——— or American poplar - 175
——— oxide of arsenic - - 63
——— vitriol - - - - 82
——— walnut - - - - 405
——— willow - - - - 144
Wild cherry tree - - - 343
——— ginger - - - - 189
——— horehound - - - 140
——— indigo - - - - 149

	Page.
Wild potato	383
—— succory	141
—— valerian	308
Wines, (medicated)	53
Wine of cinchonia, F. M.	120
—— of quinia	122
—— and list of the names of the most commonly used wines	294
—— table of the proportion of alcohol in different wines	295
Winteriana canella	173
Winter's bark	175
Winter cherry	244
—— green	240
Witch hazel	99
Worm-seed, (European)	450
Worm-seed, (American)	451
Wormwood	194

Y.

	Page.
Yellow epispastic ointment, P.	71
—— pucoon	150
—— resin or *resina flava*	214
—— root	151
—— spring, (Ohio)	110

Z.

	Page.
Zanthorhiza apiifolia	151
Zanthoxylum clava herculis	226
—— *fraxineum*	225
Zedoariæ rotunda radix	186
Zedoary, (long)	187
Zibethum	314
Zinci oxidum	81
—— *sulphas*	82

THE END.

ERRATA.

Page	20,	line 14,	for plums, *read* plum.
	"	"	grapes, *read* grape.
	"	21,	fruits, *read* fruit.
	22,	27,	mace, *read* musk.
	"	35,	*virous*, read *virose*.
	23,	42,	root, *read* roots.
	30,	7,	possess, *read* possesses.
	"	42,	cellulary, *read* cellular.
	33,	27,	substance, *read* substances.
	35,	2,	effect, *read* effects.
	37,	47,	ten drachms, *read* ten drachms of opium.
	52,	5,	dissolvent, *read* solvent.
	"	13,	disaggregation, *read* segregation.
	61,	19,	and pour, *read* fuse and pour.
	65,	39,	as stimulating, *read* as a stimulant.
	66,	22,	internally, *read* externally.
	"	24,	externally, *read* internally.
	69,	38,	tarses, *read* tarsi.
	71,	9, 23, 25,	*cantharides*, read *cantharidis*.
	"	37,	litta, *read* lytta.
	72,	37,	They have, *read* It has.
	74,	43,	grow, *read* grows.
	78,	3,	alumen, *read* alumina.
	86,	9,	barks, *read* bark.
	90,	29,	triandria, *read* triandra.
	95,	27,	follow, *read* follows.
	108,	25,	the oxide of iron is combined with lime, *read* the lime is combined with the oxide of iron.
	112,	9,	alumen, *read* alumina.
	124,	6,	pistils, *read* stamina.
	128,	8,	intermediary, *read* intermediate.
	"	23,	are, *read* is.
	138,	14,	*Chlorophile*, read *Chlorophyllin*.
	"	32,	*Cardai*, read *Cardui*.
	141,	45,	furnish, *read* furnished.
	143,	18,	the female constitutes, *read* the female flowers constitute.
	"	20,	fruit, cones, membranous, ovoid, elongate, two small, &c., *read* Fruit, a membranous, ovoid and elongate cone, with two small, &c.
	145,	24,	*Triandria*, read *Triandra*.
	167,	38,	succeeded, *read* succeed.
	178,	29,	Lolibert, *read* Lodibert.
	193,	7,	high doses, *read* large doses.
	242,	32,	*Parietariæ herbæ*, read *Parietariæ herba*.
	285,	7,	*Platina*, read *Platinum*.
	288,	14,	*Ether*, read *Æther*.
	293,	33,	Germany, *read* German.
	294,	12,	black grape with its skin have, *read* the black grape with its skin has.
	390,	50,	*compositus*, read *compositum*.
	410,	27,	*compositus*, read *compositum*.
	415,	44,	*Mercurialis amara*, read *Mercurialis annua*.
	421,	6,	fruit, *read* fruits.
	441,	28,	They are, *read* It is.

SYNOPTICAL TABLE

No. I.

Of the Distinctive Characters of the Acids employed in Medicine.

HEATED in CLOSE VESSELS.

- **Are vitrified without being decomposed or subliming.**
  - Calcined with charcoal.
    - Is not decomposed — **Boracic Acid**
    - Is decomposed, and yields phosphorus, which burns in the air — **Phosphoric Acid** — Forms with lime-water a white and flaky precipitate, which dissolves without effervescence in nitric acid.
- **Are volatilized without being decomposed.**
  - Precipitated by a solution of baryta.
    - Do not yield any precipitate with hydrosulphuric acid.
      - Does not precipitate with lime-water — **Sulphuric Acid** — Heated with charcoal, it is decomposed, and disengages vapours of sulphurous acid, distinguishable by its smell.
      - Precipitates with lime-water — **Carbonic Acid*** — In the gaseous state it extinguishes ignited bodies without inflaming.
    - Precipitate in the form of a yellow powder with hydrosulphuric acid. — Heated with charcoal.
      - Is disengaged without being decomposed. — **Sulphurous Acid*** — Odour, *sui generis*.
      - Is decomposed and yields metallic arsenic which sublimes. — **Arsenious Acid*** — The ammoniacal sulphate of copper produces a green precipitate, and the nitrate of silver forms a yellow one.
  - Not precipitated by a solution of baryta.
    - Are not decomposed by chlorine.
      - Is decomposed, while cold, by copper, and yields red vapours. — **Nitric Acid** — Is converted into nitrous acid by all substances having a great affinity for oxygen.
      - Are not decomposed by copper.
        - Precipitates the nitrate of silver. — **Hydrochloric Acid*** — The precipitate formed by nitrate of silver is white, insoluble in nitric acid, and soluble in ammonia.
        - Does not precipitate the nitrate of silver. — **Acetic Acid** — Odour, *sui generis*.
    - Are decomposed by chlorine, and yield
      - Cyanogen, which, uniting with chlorine, forms a peculiar acid, (*Chlorocyanic acid,*) soluble in water. — **Hydrocyanic Acid** — Smell, *sui generis*. When iron is immersed in it in the open air, Prussian blue is formed.
      - Sulphur, which is precipitated. — **Hydrosulphuric Acid*** — Odour, *sui generis*. Precipitates the salts of silver, mercury, and bismuth in the form of a black powder.
- **Are partly volatilized and partly decomposed.**
  - Precipitated by lime-water.
    - The precipitate may be redissolved in a small excess of acid — **Gallic Acid** — Precipitates the deuto and trito-salts of iron.
    - The precipitate cannot be redissolved in an excess of acid — **Oxalic Acid** — Produces a white precipitate with sulphate of lime.
  - Not precipitated by lime-water — **Benzoic Acid**
- **Are decomposed without volatilizing.**
  - Is precipitated by lime-water, added in excess — **Tartaric Acid** — Precipitates the solutions of potassa in the form of a grayish deposite of bi-tartrate of potassa.
  - Does not form any precipitate even with an excess of lime-water — **Citric Acid** — Does not precipitate the solutions of potassa or soda under any circumstances.

* We suppose, in this instance, these five acids in a liquid state, *i. e.* dissolved in water.

SYNOPTICAL TABLE

No. 2.

Of the Distinctive Characters of the Salts which may be employed in Medicine, considered with respect to their acid.

SALTS, which, with sulphuric acid,

- **Effervesce, and**
  - Disengage a colourless and transparent gas, of a faint odour, but slightly pungent — **Carbonates** — When heated, some are not decomposed, and others lose their acid entirely or partly. The only carbonates soluble in water, are those of potassa, soda, and ammonia; but the greater number of the other carbonates are soluble in an excess of carbonic acid. All the acids, except the hydrosulphuric and hydroselenic, disengage the carbonic acid, and combine with the base.
  - Disengage a colourless gas, of a very strong smell, like that of rotten eggs — **Hydrosulphates** — When heated, are decomposed; sometimes the acid is disengaged, and at others is decomposed, and a metallic sulphuret formed. Those which have an alkaline base, and a few others, are soluble in water. Their taste is acrid and bitter, and they exhale an odour of rotten eggs, especially when they are moist. Chlorine, and the acids, with the exception of the weakest, such as the carbonic, decompose them. Dissolved in water, they precipitate the salts of iron, silver, bismuth, copper, lead, &c.; of a black powder; those of antimony, orange; but those of arsenic yellow. When sulphuretted hydrosulphates are decomposed by an acid, sulphur is precipitated.
  - Disengage a colourless gas, having the smell of burning sulphur — **Sulphites** — Are decomposed by the action of heat. Exposed to the air, are slowly converted into sulphates; the greater number are insoluble in water.
  - Emit vapours
    - Of a deep orange colour — **Hyponitrites** — Soluble in water. Exposed to the air, they are converted into nitrates. They are not used in practice.
    - Of a purple colour — **Hydriodates** — Heated, they are converted into iodides; are soluble in water; are not decomposed at the common temperature by hydrochloric acid. They form insoluble iodides, with the greater number of the salts of the three last sections. The iodide of silver is white and insoluble in ammonia.
  - Emit white pungent vapours, which
    - Are soluble in a very small quantity of water without being decomposed. — **Hydrochlorates** — When heated, some evolve their acid, the others are transformed into chlorides. The greater number are soluble in water. They form with nitrate of silver a white and curdy precipitate, insoluble in nitric acid, and soluble in ammonia.
    - By being dissolved in water, deposite white flakes. — **Fluates** — Are not employed in medicine.
- **Do not effervesce, and**
  - Emit light white vapours — **Nitrates** — Are decomposed at a high temperature, and the acid being partly converted into orange-red nitrous acid; melt on live coals; are soluble in water, or in a small excess of acid. Hydrochloric acid decomposes them, with evolution of chlorine and nitrous acid.
  - Emit a very strong smell of vinegar — **Acetates** — Are decomposed by the action of heat, and yield acetic acid, pyro-acetic spirit, &c. the base being left in the state of metal, of oxide, or of carbonate; are soluble in water, and decomposed by all the strong acids.
  - Emit a very strong odour of bitter almonds — **Hydrocyanates** — Heated, they are transformed into cyanurets, or are completely decomposed. Those with an alkaline or earthy base are more or less soluble in water. They precipitate the salts of iron of a deep blue colour.
  - Emit neither vapour nor particular smell; heated,
    - Yield carbonic acid, oil, and the other products furnished by the decomposition of vegetable matters.
      - The precipitate they form with lime water,
        - Is soluble in a small excess of acid. — **Tartrates** — Some are soluble in water, others become so by the addition of a small quantity of acid, or of the tartrates of potassa, soda, or ammonia; are decomposed by the strong acids, and precipitate the salts of baryta, strontia, &c.
        - Is insoluble in a small excess of acid. — **Oxalates** — Some are soluble in water, when neutral, but they are less soluble in an excess of acid; others are insoluble, or are only soluble in an excess of acid. They produce a white precipitate with the salts of baryta, zinc, lead, mercury, antimony, &c.
    - Do not yield these products.
      - Are not precipitated by nitric acid. The precipitate they form with the watery solution of baryta,
        - Is insoluble in nitric acid. — **Sulphates** — By the action of caloric, some are decomposed, and others are not. Calcined with charcoal, they are transformed into a metallic or alkaline sulphuret. Some are soluble and others insoluble. They throw down a white precipitate with the salts of lead.
        - Is soluble in nitric acid. — **Phosphates** — When calcined, they are vitrified; calcined with charcoal, they are transformed into sub-phosphates, with a great excess of base, and yield phosphorus, or are changed into metallic phosphurets. Those of potassa and soda are alone soluble in water. The insoluble phosphates dissolve in an excess of acid, and are all transformed into super-phosphates by the strong acids.
      - Yield metallic arsenic. Treated with hydrochloric acid,
        - Yield no precipitate. — **Arsenites** — Heated, the acid is altogether volatilized or partially decomposed, or yields metallic arsenic, which is sublimed. They precipitate the sulphate of copper in the form of a green powder, the nitrate of silver in a yellow one, and the salts of lime in the form of a white powder.
        - Yield a white precipitate. — **Arseniates** — When heated, they produce the same results as the arsenites, and yield a brick-red precipitate with the nitrate of silver.
      - Are precipitated white by nitric acid. Calcined with charcoal,
        - Are not decomposed. — **Borates** — When calcined, they are not decomposed, but vitrified.

SYNOPTICAL TABLE

No. 3.

Showing the Distinctive Characters of the Salts which may be employed in Medicine, considered with respect to their Base.

SALTS, which not being precipitated by pure hydrosulphate of potassa,

- **Are not precipitated by ammonia.**
  - **Are not precipitated with sub-carbonate of potassa.**
    - **Triturated with quicklime, do not disengage ammonia, and**
      - With hydrochlorate of platinum produces a yellow precipitate. — **Potassa** — They are almost all very soluble in water; a great number crystallize with difficulty. When they are mixed with a concentrated solution of sulphate of alumina, soon after octaedral crystals of alum are produced. With a solution of tartaric acid, a grayish deposite of bi-tartrate of potassa is formed.
      - With hydrochlorate of platinum produces no precipitate. — **Soda** — They are, generally, more soluble, and crystallize more readily than the salts of potassa; they do not form alum with sulphate of alumina, nor any precipitate with tartaric acid. The salts of potassa and soda may be distinguished from those of rhodium, by the addition of a little potassa, which does not render the former turbid, while it throws down a yellow precipitate with the latter.
    - **Triturated with quicklime disengage ammoniacal gas, easily recognised by its smell.** — **Ammonia** — They are very soluble in water; form alum with sulphate of alumina, and produce a yellow precipitate with hydrochlorate of platinum.
  - **Form with sub-carbonate of potassa a white precipitate, which, heated to a red heat,**
    - **Is decomposed and yields an alkali, which dissolved in a small quantity of water,**
      - Does not produce a precipitate with sulphuric acid. — **Lime** — A few only are soluble in water. They produce a white precipitate with oxalic acid and oxalate of ammonia, with the sulphates, &c.
      - Does produce a precipitate with sulphuric acid — **Strontia** — They are generally more soluble than the salts of baryta; are not precipitated by succinate of ammonia, and change the flame of a lamp to a purple colour.
    - **Is not decomposed, and is not soluble in water** — **Baryta** — The greater number are insoluble; they produce with sulphuric acid and the sulphates a white precipitate, insoluble in nitric acid; they are precipitated by the succinate of ammonia, and the flame of a lamp is not coloured purple by them.
- **Are precipitated by ammonia; the precipitate treated with boiling alcohol,**
  - **Is not dissolved** — **Magnesia** — The greater number are soluble in water and crystallize easily; ammonia precipitates only a portion of the magnesia, and forms with the remainder a triple salt, which is precipitated by potassa. The salts of magnesia may be distinguished from those of glucina and yttria by this circumstance, that the precipitate they form with sub-carbonate of potassa, does not dissolve in an excess of this salt, as happens with the salts of the latter earths.
  - **Is redissolved; the solution yields, on evaporation,**
    - **Crystals, which by contact with nitric acid,**
      - **Assume a beautiful red colour this solution is precipitated by proto-hydrochlorate of tin,**
        - Of a dirty brown colour — **Morphia** — Almost all the salts of morphia are soluble in water and crystallizable; when heated, it melts, and concretes on cooling into a radiated transparent mass; heated to a higher temperature, it is decomposed.
        - Of a violet colour — **Brucia** — They are all soluble in water; most of them are crystallizable; the acetate does not crystallize; brucia melts when heated, and is then decomposed.
      - **Do not change colour or merely become yellow; and which, when heated,**
        - **Are decomposed without melting or volatilizing. Treated with ether,**
          - Scarcely dissolve in it. — **Strychnia** — The greater number are soluble and crystallize easily. Nitric acid never produces a red colour with strychnia, except when it contains brucia.
          - Are readily dissolved in it. — **Picrotoxia** — They all contain an excess of acid, and have been little studied.
        - **Are in part decomposed, and in part volatilized, without melting.** — **Cinchonia** — Some are soluble, others are not; the acetate is uncrystallizable; their solution is precipitated by the alkaline oxalates and tartrates; the solution of the nitrate, evaporated slowly, yields oleaginous drops, which congeal on cooling, in the same manner as wax, and which, being covered with a small quantity of water, do not dissolve in it, but are converted, in a few days, into a group of prismatic crystals.
    - **A powder, or a white uncrystallizable mass, which is**
      - **Soluble in ether, and forms with acids, salts which**
        - Are crystallizable — **Quinia** — The acetate readily crystallizes in silky needles; the nitrate has the same character as that of cinchonia, which may serve as a mark by which the salts of these two bases may be distinguished from all the other organic alkalies. The soluble salts of quinia are precipitated by the alkaline oxalates and tartrates.
        - Are uncrystallizable — **Veratria** — Little known. **Delphia** — Little known.
      - **Insoluble, or nearly so in ether, and which, when heated**
        - Melts at 50° Centig. (122° Fahr.) — **Emetia** — They are all acid, soluble in water; and are not precipitated by the alkaline oxalates or tartrates.
        - Melts only at a temperature above 100° Centig. (212° Fahr.) — **Solania** — But little known.

SALTS, which are decomposed by hydrosulphate of potassa, and yield

- **A white precipitate**
  - Are not precipitated by hydrosulphuric acid — **Alumina** — The greater number are soluble, but crystallize with difficulty. They are not precipitated by oxalate of ammonia or tartaric acid, like those of yttria; and they yield with potassa a white precipitate soluble in an excess of this reagent, which distinguishes them from the salts of zirconia.
  - Are precipitated white by hydrosulphuric acid — **Zinc** — The greater number are soluble, and produce a white precipitate with alkalies and hydro-ferro-cyanate of potassa, (ferro-prussiate of potassa;) the infusion of galls does not precipitate them.
- **A black precipitate,**
  - **A dark blue precipitate, or which becomes so by the contact of the air.** — **Iron** — The greater number are soluble, and are either of a green or reddish-yellow colour. Potassa produces with them a precipitate either white, green, or red, according as they are formed by the protoxide, deutoxide, or peroxide; but the precipitate assumes in all cases a reddish colour by the action of the air. They also form, with the infusion of galls, a black or violet precipitate; with the phosphate of soda a white precipitate; and with the benzoate of ammonia, a yellow one.
  - **Are not decomposed by a rod of copper, and yield by the addition of hydro-ferro-cyanate of potassa**
    - **A white precipitate; with an infusion of galls, yield**
      - A white precipitate. — **Lead** — The greater part do not dissolve in water, except by the aid of an excess of acid; potassa precipitates them in the form of a white powder; they produce a yellow precipitate with the chromates, and are decomposed by the contact of metallic zinc, which precipitates the lead in the metallic state.
      - An orange precipitate. — **Bismuth** — They are thrown down in the state of a white precipitate by potassa; those which have an excess of base are insoluble.
    - **A precipitate of a crimson or brown colour.** — **Copper** — The greater number are soluble; their solution is either green or blue; they produce a blue precipitate with potassa; a brown one with galls; a light green one with arsenite of potassa. Iron decomposes them and precipitates the copper in the metallic state.
  - **Are decomposed by a rod of copper, and produce with an infusion of galls,**
    - **An orange-yellow precipitate** — **Mercury** — The greater number of those which are soluble are super-salts; those formed by the protoxide are precipitated black by potassa; white by hydrochloric acid; and orange-red by the chromates. Those formed with the deutoxide produce a yellow precipitate with potassa; a white one with hydro-ferro-cyanate of potassa, and are not precipitated by the hydrochlorates. Copper precipitates the mercury in the metallic state.
    - **A yellowish-brown precipitate** — **Silver** — The greater number are insoluble; they form an olive precipitate with potassa; a yellow one with the phosphates, and a white one with the hydrochlorates, and the hydro-ferro-cyanate of potassa. Proto-sulphate of iron, metallic copper, &c. precipitate the silver in the metallic state.
    - **A brown precipitate** — **Gold** — They are soluble in water, and colour it yellow; they produce a brown precipitate with potassa; a white or whitish-yellow with hydro ferro-cyanate of potassa; and a purple one with a diluted solution of proto-hydrochlorate of tin. Gallic acid colours them green, and precipitates the gold in the form of a brownish powder.
- **An orange precipitate** — **Antimony** — Potassa produces a white precipitate, soluble in an excess of the alkali; galls throw them down of a yellowish-white colour; iron and zinc precipitate the metal in the form of a black powder; water decomposes them unless they have a double base.
- **A yellow or chocolate coloured precipitate** — **Tin** — The proto-salts are slowly decomposed by the contact of the air; the hydrosulphates precipitate them of a chocolate-brown; those formed by the deutoxide are not altered by the air, and are thrown down of a yellow colour by the hydrosulphates; they are all precipitated of a white colour by potassa and hydro-ferro-cyanate of potassa, and of a red by cochineal.

N. B. We treat here only of such salts as are not formed by metallic acids. However, should the salt to be examined be soluble, we must pulverize and boil it in ten or twelve parts of water, and three or four of sub-carbonate of potassa. in this manner a part is transformed into a carbonate, which must be washed and afterwards dissolved in nitric acid.

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